

The University of Chicago

THE RAILWAY PATTERN OF METROPOLITAN CHICAGO

A DISSERTATION SUBMITTED TO THE FACULTY
OF THE DIVISION OF THE PHYSICAL SCIENCES
IN CANDIDACY FOR THE DEGREE OF DOCTOR
OF PHILOSOPHY

DEPARTMENT OF GEOGRAPHY
SEPTEMBER, 1943

By
HAROLD MELVIN MAYER

CHICAGO, ILLINOIS

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PREFACE

This dissertation presents a picture of the present railway pattern of metropolitan Chicago, its operation, and its outstanding relationships to the other features of the metropolitan organism.

Many studies have been made of the railway terminal problems of Chicago. Each was based upon certain basic assumptions, or was directed toward certain special aspects of the problems in accordance with the particular point of view of the agency making the study. To the best of the author's knowledge, this dissertation is the first study that presents the railway routes and facilities as a pattern, not only within themselves, but as integral parts of the metropolitan organism in intimate relationship to many of its other parts.

No attempt is made to propose modifications of the railway pattern or to suggest specific solutions to the complicated terminal problem, but the planner will find in this document many of the basic facts, and discussion of their relationships, that are indispensable prerequisites to a comprehensive understanding of the problem. The contribution that the geographer can make is to provide a picture of the dimensions and scope of the problem in terms of the areal and functional relationships among the component parts of the railway pattern, and between that pattern as a whole on the one hand and the physical and cultural features and activities that together constitute metropolitan Chicago on the other. This dissertation, therefore, sets the stage upon which the planner can act.

Some of the features of the pattern can fully be understood only with knowledge of their origin and evolution. It was the author's original intention to include an account of the pattern's historical development, but lack of time prevented its completion. In many instances, however, where features of the pattern are wholly or partly explained by their history, brief explanations are included in the text or as footnotes. It is hoped that a more complete account of the development and evolution of metropolitan Chicago's railway pattern, based upon the

information and material in the author's possession, may be completed in the future.

It will be noted that the pattern is described from the periphery toward the center of the metropolitan area. The reason is that many of the features of railways in central Chicago can better be understood when placed in the framework of the entire metropolitan railway pattern, whereas the peripheral features such as the major classification yards and belt lines can be understood without knowledge of the details closer to central Chicago which are of more local significance. Downtown terminals primarily affect the pattern of railways in central Chicago; the classification yards and belt lines are related to the entire regional, and even continental, railway network.

The study of transportation facilities has been the author's principal hobby and recreation for many years, and a knowledge of the facilities and their operation in metropolitan Chicago was acquired during fifteen years of residence in the city. The realization that the facilities are related physically and functionally to one another as well as to other aspects of the urban pattern led to a desire to study and describe such relationships, particularly since there is a vast amount of literature available on the individual facilities but very little on their relationships.

The gathering of specific material for the dissertation, by means of field observation, interviews, and library research, began during the winter of 1939-40, but the outbreak of the war in Europe, the movement of military supplies through Chicago, and the consequent limitations imposed by the railways upon access to their properties and records caused the discontinuance of work on the dissertation. Meanwhile, the author became a member of the Chicago Plan Commission staff. As a result of the experience with the city's official planning agency, it was realized that a better knowledge of the functioning of the railway pattern was needed on the part of professional planners as well as on that of the public. It was further realized that, even though specific information on some points was lacking, the author was sufficiently acquainted with the general aspects of the pattern to present a picture of it that will, it is hoped, contribute to a better understanding of it and consequently to more effective solutions of some of its problems.

Work on the dissertation, therefore, was resumed in the late summer of 1942, and continued until the following spring. Due to wartime restrictions the document lacks much that the author wished to include. The inclusion of much specific detailed information on traffic flows, of yard and terminal layout maps, and of photographs was deemed by the author to be inadvisable during wartime.

During the early stages of the work on the dissertation, many persons, including scores of railway officials, contributed information and suggestions. In many instances specific acknowledgment is made in footnotes, but a large number of other persons, too numerous to list, also gave valuable information and assistance, for which the author is grateful.

The Chicago Plan Commission staff, for its friendly interest and encouragement, has the author's appreciation. Particularly valuable was the service rendered by Mr. William F. Kaiser, who assisted in completing the drafting of some of the maps when the author was called into war service. Dr. Homer Hoyt, Director of Research, made valuable suggestions.

Particularly appreciated are the advice, suggestions, and interest of the Department of Geography of the University of Chicago. The author is especially grateful to Professor Henry M. Leppard, under whose general direction the dissertation was prepared, for his advice and critical reading of the work as it progressed, and for his encouragement.

Finally, a very great debt is due to the author's parents, Rose and Alexander Mayer, without whose interest, stimulation, and inspiration this dissertation would have been impossible.

Washington, D. C.
May 24, 1943

Harold M. Mayer

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CHAPTER I

METROPOLITAN CHICAGO AS A CONTINENTAL RAILWAY CENTER

Metropolitan Chicago, the most important railway center of the continent if not of the world, possesses an extremely complex pattern of railway lines and a multitude of terminal facilities that together constitute a functioning organic unit and a vital node in the continental railway network. The pattern reflects both the functions now performed and the forces that have been responsible for its development in the past.

Within the metropolitan area, the complexity of the pattern becomes less when one understands the relationships between its components. The general pattern is relatively simple; only the details and ramifications are complex. The numerous trunk lines that converge in central Chicago from all directions bring passengers to and from a series of downtown terminals that have constituted one of the city's major planning problems. Much freight, too, reaches the central area, although in recent years the freight handling has more and more shifted toward the urban periphery. The thousands of cars to and from thousands of origins and destinations both within and without the metropolitan area are classified and shuffled into road freight trains and transfer trains at large yards, mainly on the edge of the urban area. To and from the yards lead a large number of radial lines, cityward continuations of the trunk routes, connecting the minor yards, downtown freight terminals and industrial sidings with the major outer yards. Interconnecting the yards and also serving industries along their routes are a number of circumferential belt lines that enable freight to move between any trunk line on the one hand and any trackside location within the metropolitan area on the other. Supplementing the belt lines are other switching and industrial lines reaching additional industrial sidings and freight stations. All of those freight handling facilities are fed by a freight tunnel system in central Chicago, and by

motor trucks that perform pick-up and delivery. Finally, there are many accessory facilities necessary to maintain the railway service: shops, engine terminals, coach yards, and offices, all closely interrelated both to one another and to the other features of the urban pattern. Beyond that, they are integral parts of the continental railway network.

Relation of Chicago to the Continental Rail Network

Metropolitan Chicago, as the result of its central location relative to the volume of traffic and the density of the railway network, is of importance in relation to the entire pattern of railways on the North American continent.

The Chicago terminal area is located well within the dense network of railways that extends from the Atlantic seaboard to the Great Plains and from the Ohio and Missouri rivers northward to the northern edge of the dairy belt in central Michigan and Wisconsin. The network of rail lines in that area is the densest and busiest of any part of the continent. Within the area are the greatest industrial production in North America and the most fertile and productive agricultural lands. With the exception of a few small mountainous areas such as the Adirondacks, no point in the vast area between the Atlantic coast and the semi-arid Great Plains, and between peninsular Ontario and the Ohio and Mississippi rivers is more remote than ten miles from a railway line.¹ Because nearly all of the railways in the area operate on a standard gauge--4 feet 8-1/2 inches--and because rolling stock is standardized for interchange among practically all of the railways, the entire area may, in a sense, be considered as a part of the railway "sphere of influence" of Chicago. The lines of 21 major companies, which together operate more than 40 per cent of the total railway mileage of the United States, converge within the metropolitan area. Those lines extend from the Canadian to the Mexican border and from the Atlantic to the Pacific. Either directly over their own lines or by connections with other railways, the companies that serve Chicago provide expeditious service between Chicago and almost all points on the railways of

¹That dense type of railway network has been called a "railweb" (Mark Jefferson, "The Civilizing Rails," Economic Geography, IV [1928], 217-31).

the United States, Canada, and Mexico.¹

The relationship of metropolitan Chicago to the railway network of North America may best be considered by analyzing briefly the character of the traffic that passes through the Chicago terminal district. The traffic is of two general types, first, through or "overhead" traffic that is in transit from a shipping point to a destination which makes necessary transfer within the metropolitan area from one rail line to another, and second, traffic that originates or terminates within the metropolitan area. In addition, there is a small amount of intra-district traffic that both originates and terminates within the Chicago switching district, but such local short-haul traffic is almost insignificant. The through or "overhead" traffic, though of great importance to the national economy and to the railways that handle it, is not of major significance in the growth and functioning of the metropolis. Through traffic does not make a city unless the city is so situated, or the transport facilities so designed, as to necessitate break of bulk. Except for a small amount of less-than-carload (l.c.l.) merchandise, break of bulk does not occur in the case of through railway shipments routed via the metropolitan area. The traffic that originates and terminates locally, however, is the life-blood, the principal raison d'etre of the city.

Within the metropolitan area, from six to ten million freight cars are handled each year, more than three-fourths of which carry loads originating or terminating within the area.² Six hundred freight trains, and nearly as many passenger trains, arrive and depart each day. An average of about seventeen thousand carloads of freight are handled daily, more than the combined traffic of America's next two metropolitan railway terminal areas.

The vast complex of railway facilities makes Chicago unique among the railway centers of the world. To Chicago normally come, over its steel rails, the raw materials and foodstuffs of

¹Traffic between the United States and Cuba normally is handled by car ferries without break of bulk. Such handling enables cars to be shipped directly between Chicago and points in Cuba.

²Committee on Co-ordination of Chicago Terminals, The Freight Traffic of the Chicago Terminal District (Chicago: Privately printed, 1927), and Federal Co-ordinator of Transportation, Freight Traffic Report and Merchandise Traffic Report (Washington: Government Printing Office, 1936).

the world, and from Chicago to the world markets move the manufactured products and processed agricultural commodities of America's first agricultural center and second manufacturing center. The prosperity of Chicago does not, therefore, depend upon a limited number of natural resources or activities. The city and its metropolitan area, furthermore, are not dominated by a single railway company, the policies and activities of which may mean life or death for the community as in the case of Altoona or Pocatello,¹ or by two or three companies as in the case of Boston,² Baltimore, Philadelphia, and Pittsburgh. In such cities the intense competition of the rival railways makes them especially vulnerable to economic disturbances resulting from the railways' traffic and routing policies.

The 21 trunk line companies that have lines entering Chicago operate 28 divisions or routes into the metropolitan area. Each of the divisions functions more or less as a separate line even though operated by the same company as other divisions, because traffic interchanged between two divisions of the same railway system must, in general, be handled in the same way as that interchanged between two different railways. Of the 28 divisions or routes 11 serve the industrial northeastern portion of the United States and eastern Canada and radiate in easterly or southeasterly directions; 3 serve the territory directly to the south of Chicago; and 14 serve the territory southwest, west, and northwest of the city. In addition, 3 interurban electric railways enter Chicago. In all, 55 main-line tracks radiate in all landward directions from the city.³

¹Robert L. Wrigley, Jr., The Occupational Structure of Pocatello, Idaho (Ph.D. dissertation, Department of Geography, The University of Chicago [Chicago: Private Edition, Distributed by the University of Chicago Libraries, 1942]).

²Edwin J. Clapp, The Port of Boston (New Haven: Yale University Press, 1916).

³The metropolitan area is served, in addition to the trunk lines, by a number of belt lines, terminal railways, switching and industrial lines. Approximately 5,000 industries are served by individual side tracks, based upon an account of the listings in: Illinois Freight Association, Chicago Switching Committee (Tariff 22-CC, List of Industries with Private Switch Tracks in the Chicago Switching District [Chicago, 1942]). Within the Chicago Switching District, which includes the major part of the metropolitan area, 400 square miles in all, there are 5,710 miles of railway track, 160 freight yards, 75 freight stations, 6 major passenger terminals, and many auxiliary facilities.

Chicago is one of the most accessible railway centers of North America. Nearly all of the territory within 500 miles of the city may be reached within 12 hours by means of regularly-scheduled daily passenger trains. That vast territory includes the entire Great Lakes region with the exception of parts of the shores of Lake Superior, and includes the most productive parts of the Corn Belt, and the agricultural areas as far west as the eastern edge of the Great Plains. It also includes all of the manufacturing centers of Ohio and western Pennsylvania, and the northern edge of the Cotton Belt, south of the Ohio River. Within 24 hours from Chicago one may reach more than 50 per cent of the area and about 80 per cent of the population of the United States. The area reached within 24 hours by fast regularly-scheduled merchandise cars is also very extensive, including most points 300 to 500 miles from Chicago. Within two days by merchandise cars are most of the railway stations within 700 miles, and some as distant as 900 miles. All parts of the continental United States are normally within seven days of Chicago by fast regular freight trains.

Character of Chicago's Railway Traffic

The character and directional balance of the traffic that moves through Chicago reflects the nature of the metropolitan area as a manufacturing, concentrating, and distributing center. Large quantities of raw materials and agricultural produce--commodities of heavy bulk and tonnage--are received. Smaller tonnages, but with higher values, of manufactured and processed products are forwarded. The unbalance of tonnage inbound and outbound is of some advantage to the railways and to the metropolitan area in relation to the supply of cars because shippers within metropolitan Chicago are almost always assured of an available supply of empty cars for loading with outbound shipments. Fifty per cent more carloads are received in the area than are shipped.¹

Full carloads predominate in shipments from Chicago. Car-

¹In 1927 the average number of inbound freight cars with loads destined for the metropolitan area was 7,800 daily, as contrasted with only 4,800 outbound cars that were loaded within the area (Committee on Co-ordination of Chicago Terminals, *op. cit.*, p. 34). The relative proportion of inbound and outbound loads has probably not changed very significantly since 1927.

load freight greatly exceeds less-than-carload freight even though the greater proportion of the outbound freight consists of manufactured goods and products of high value in proportion to the space they occupy in the cars. Carloading companies and freight forwarders, as well as the l.c.l. terminals of the railways themselves, perform a service in consolidating many small shipments from large numbers of shippers into carload lots of sufficient volume to permit the dispatching of full merchandise cars on regular schedules to many destinations in every direction. Only the great volume of the traffic of the metropolitan area permits such full cars to be operated regularly.

By far the greater proportion of the shipments to and from the terminal district originate or terminate on the private sidetracks of the larger industrial establishments. The assembling into trains of cars from thousands of industries bound for thousands of destinations, and the distribution of cars from as many points of origin to the many industrial sidings is largely responsible for the great complexity of terminal facilities and the extensive areas of land that are used by the railways.

Passenger traffic is of considerably less importance than is freight traffic, not only from the standpoint of the revenues received by the railways, but also with regard to the number, size, and complexity of the facilities required for its handling. Passenger traffic for the most part originates and terminates at six principal depots. There is, except for special unscheduled movements, no problem of interchange of passenger cars from one railway line to another because no regularly-scheduled passenger trains operate through the city. The problem of interchange of passenger traffic among the railways in Chicago involves the transfer of passengers and their baggage from one depot to another, rather than the interchange of cars.¹ The transfer problem thus merges with the general problem of vehicular and pedestrian traffic on the streets of the central part of Chicago, and is greatly complicated by the development of an unco-ordinated group of terminals that resulted from the competition of the individual railways when each sought its own central site for a passenger terminal.

¹One transfer company operates a fleet of taxicabs and baggage trucks devoted especially to transfer among the major passenger terminals. Such equipment may properly be considered as part of the pattern of railway facilities of metropolitan Chicago

The Interchange of Through Traffic at Chicago

Many of the problems arising out of maladjustments in the railway pattern result from the fact that Chicago is an important point of interchange for through traffic. Thus the terminal problems are not merely the concern of Chicago; they vitally affect the smooth functioning of the entire national transportation plant. All of the through traffic, as well as a large proportion of the traffic that originates and terminates locally, must be interchanged between two or more railways within the metropolitan area. Chicago is one of the most important centers in the world for the interchange of through railway traffic. Its importance is explained by two principal reasons: first, by the attraction exerted by the strategic importance of Chicago during the formative period of the railways, and second, by the fact that in the United States the railways developed as large privately owned systems either by careful advance planning or by accretion through the addition of previously-existing extensions of competing lines. No single railway company ever developed its lines to form an important route passing through the Chicago metropolitan area from one side to the other. In spite of the fact that the total volume of through traffic is relatively small in comparison with the volume originating and terminating locally,¹ its effects have been of considerable importance in the development of the railway pattern of metropolitan Chicago. The through traffic is of three types: first, less-than-carload freight which is commonly transferred from car to car within the terminal district; second, freight transferred between rail carriers and other transport media; and third, by far the most important, carload freight that is interchanged from one railway to another without breaking bulk. Approximately five thousand loaded freight cars are interchanged daily within the Chicago metropolitan area. The average time occupied by the interchange, from the time of arrival of the incoming train until the departure of the car in the outgoing train is a measure, not only of the efficiency of the railways' operation, but also of the efficiency of the pattern of routes and facilities

¹The ratio of local to through freight traffic exceeds 75 per cent (Committee on Co-ordination of Chicago Terminals, op. cit.). In 1927 the ratio was given as 13 per cent. An estimate made in 1939 by the late R. A. Sperry, then Chairman of the Illinois Freight Association (personal interview) was 25 per cent.

within the metropolitan area.¹ That time includes that necessary for the breaking up of the inbound train, delivery of the car to the yard in which the outbound train is made up, classification of the car, and its placement in the outbound train. The intermediate carriers and yards, including the belt and switching lines, are of vital importance in these interchange operations.

Significance of Chicago to east-west traffic.--The principal volume of through railway traffic, including both passenger and freight, handled in the Chicago metropolitan area is traffic between the territory east of Chicago and that to the west. Complimentary trade between the industrial East and the agricultural West has been a major factor in the development of Chicago as an industrial center, a commercial and distribution center, and a transportation center. "Chicago has come into being and has waxed great in an era of predominantly east-west moving traffic."²

In the handling of the east-west traffic Chicago is the most important "gateway" in the United States.³ It is the principal terminal and meeting place of both the eastern "trunk lines" and the western "transcontinental" railway systems. Even the basic classification of freight for rate-making purposes is different east and west of Chicago, the terminal district being on the border between the eastern "Official Classification Territory" and the "Western Classification Territory." No railway passes through Chicago between the two territories.⁴ Chicago, a natural

¹In 1927 the average time of a car in interchange was 27 hours, with handling at an average of 2.8 yards.

²John Paul Goode, The Geographic Background of Chicago (Chicago: The University of Chicago Press, 1926), p. 58.

³A "gateway" is a point on the boundary between two rate territories, and is a point at which the various competing railways within each of the territories exchange traffic with the connecting railways outside of the territory. The flow of traffic is largely determined by the relationships of the various competing gateways to the rate structures within their tributary areas, and by the speed of interchange of traffic among the railways at each gateway.

⁴Very early in its history as a railway center, Chicago's importance as a future transcontinental gateway hung in the balance. Had the original recommendation of the engineer in charge of the survey for Chicago's first railway, the Galena and Chicago Union, in 1846, been carried out, a major railway center, perhaps more important than Chicago itself, might have developed at the southeast end of Lake Michigan at the site of New Buffalo, Michigan. Richard P. Morgan, the surveyor, urged that the line of the

point of interchange for through traffic, became even more important as a railway center as the result of the development of the railways into various financial and operational units and of the development of a rate structure that greatly favored Chicago as a point of interchange.

The fast service and frequent schedules of both freight and passenger trains made possible by the large volume of traffic originating and terminating within the metropolitan area has also attracted a large volume of through traffic to Chicago. That is because the frequency of train service in practically all directions minimizes the delay in making train connections and assures availability of outbound service for the continuation of through movements beyond the terminal district. The result is that the Chicago district handles almost as much through traffic as do all of the other transcontinental gateways together.¹

Chicago, however, is not the only transcontinental gateway. The boundary between the eastern and western territories for purposes of rate-making, routing, and railway operation is defined by the railways as following Lake Michigan and the Illinois and Mississippi rivers. All along the line are other inter-

Galena road that was to be built west from Chicago also be extended eastward around the southern end of Lake Michigan to New Buffalo, there to connect with the Michigan Central, which was extending its line westward from Detroit to New Buffalo (Richard P. Morgan, Report of the Survey of the Route of the Galena and Chicago Union Rail Road [Chicago: Chicago Tribune Print, 1847], p. 17). Morgan pointed out that the construction of the railway around the lake would have presented no engineering difficulties and would have made possible through shipments of goods by rail from west of Chicago to eastern markets without dependence upon lake navigation. As a result of this recommendation, negotiations were entered into with the Michigan Central for lease or joint use of a connecting link. Attempts were made to secure the Indiana charter of the defunct Buffalo and Mississippi Railroad, but that was not accomplished, and the Michigan Central's rival, the Northern Indiana Railroad, was enabled to construct a line over that route (Circular Statement of the Conditions and Prospects of the Northern Indiana Railroad Company [New York: September, 1851], p. 3).

Had New Buffalo developed as the connecting point between the early eastern and western railways, much of the commerce that now passes through Chicago would probably have been diverted around the city. The initial importance of New Buffalo as a point of interchange may well have attracted additional railways there.

¹Federal Co-ordinator of Transportation, Freight Traffic Report (Washington: Government Printing Office, 1934), p. 86.

change points through which the transcontinental traffic, or any traffic between eastern and western territories, may be routed. Very few railways, and none of vital importance to the nation as a whole, cross the boundary. Only one through Pullman car is regularly scheduled daily to cross the boundary from an eastern to a western railway. It does not pass through Chicago.¹

Alternative routes are available for through traffic, avoiding metropolitan Chicago and passing through the other gateways. The tariffs, both freight and passenger, provide many optional routings for through traffic, in most cases at no difference in cost to the shipper or passenger.² On traffic between eastern and western United States interchanges may be performed at a large number of points from Sault Ste. Marie on the north to New Orleans on the south. The most important three competitors of Chicago for interchange of through east-west traffic are St. Louis,³ Memphis, and New Orleans, although some traffic is handled north of Lake Superior by the Canadian railways, some at Sault Ste. Marie, some across Lake Michigan by car ferry north of Chicago to points on the west shore of the lake,⁴ and some through Peoria, Thebes, Vicksburg, Baton Rouge, and other less important interchange points on the Illinois and Mississippi rivers.

The Panama Canal, since its opening in 1915, has been a most significant factor in diverting a large proportion of the through long-haul east-west traffic between points as far inland as eastern Ohio on the one hand and Colorado on the other. Such traffic may normally be shipped through the Panama Canal at rates lower than by rail across the continent through Chicago. The in-

¹Federal Co-ordinator of Transportation, Passenger Traffic Report (Washington: Government Printing Office, 1934), p. 36, checked by examination of train consists in the Official Railway Guide of September, 1939.

²The many optional routes and gateways are listed in the various freight and passenger tariffs. For a summary see Traffic Geography (Chicago: The American Commerce Association, 1920). The general pattern of gateways has not changed greatly since 1920.

³Harold M. Mayer, "Nation's Crossroads," Trains, II (July, 1942), 30-39, and Lewis F. Thomas, Localization of Business Activities in Metropolitan St. Louis ("Washington University Studies, Social and Philosophical Sciences, No. 1"; St. Louis: Washington University, 1927).

⁴Harold M. Mayer, "By Rail Across Lake Michigan," Trains, II (September, 1942), 14-20.

crease of traffic since 1920 on the Mississippi River system, resulting from governmental subsidy in the form of navigation aids and the Federal Barge Lines, has diverted some low-rate heavy-tonnage movements away from the all-rail routes to the water route via Panama. The long-short haul clause of the Interstate Commerce Act encourages the diversion of transcontinental traffic by creating a rate plateau in the middle west, thus causing traffic to be drained toward the seacoasts and away from Chicago.

Significance of Chicago to north-south traffic.--In addition to being a principal interchange point for east-west traffic, Chicago is also an important gateway or point of interchange for traffic moving between north and south.¹ Traffic flows to and from Chicago in all directions, and in many cases the routing of shipments is such that the metropolitan area is actually the apex of a triangle, the inbound and outbound routes forming a sharp angle at Chicago, even when a more direct route avoiding the Chicago terminal district is available between origin and destination. The circuitry of routing is undoubtedly the result of the large number of railways that converge at Chicago and the consequent availability of connecting services in many directions. The total volume of north-south traffic handled through Chicago is less than the volume of the east-west traffic but is, nevertheless, an important factor in the localization of the terminal and interchange facilities of the metropolitan area.

Significance of Chicago as a Rail-Water Transshipment Port

Chicago is a lake and river port as well as a railway center; and the facilities for interchange of traffic between rail and water carriers are of significance in the metropolitan railway pattern.² During the season of navigation, about seven or

¹Federal Co-ordinator of Transportation, Freight Traffic Report, III, 88.

²Chicago originally developed as a lake port. Poor overland transportation, however, limited the commercial importance of the hinterland. Completion of the Illinois and Michigan Canal in 1848, linking the Great Lakes with the Des Plaines River and thus with the Mississippi Valley, greatly increased the importance of Chicago as a port. The harbor at the mouth of the Chicago River was the focus of commercial activity. Within a short time the railways overshadowed the canal in importance and became the

eight months each year, the volume of traffic interchanged between rail and water carriers is very considerable. Specialized facilities are available for the handling of each of the principal commodities in the port. The interchange to and from water carriers is of two types: bulk commodities, and merchandise or package freight. In tonnage, the former is by far the more important.

Two principal water routes terminate at Chicago. They are: first, the Great Lakes route which serves the territory both north and east of the metropolitan area, and second, the Mississippi Valley route, serving the territory to the south and west. Since the completion in 1933 of a nine-foot channel between Chicago and the Gulf of Mexico, the new Lakes-to-Gulf waterway has served an increasing volume of traffic each year. The route, once used by the old Illinois and Michigan Canal, follows the Chicago River, the Chicago Sanitary and Ship Canal and the Des Plaines River to the Illinois, and the Illinois River to the Mississippi. Thus Chicago is connected with St. Louis, Kansas City, Minneapolis, Pittsburgh, New Orleans, Houston, and many other points on the inland waterways by common-carrier barge lines operating on regular schedules. The Great Lakes, in addition to serving as a water connection between Chicago and the other lake ports, connects Chicago with the Atlantic Ocean and Europe by direct steamship service performed by small ocean-going vessels. Enlargement of the St. Lawrence seaway, long proposed, would make Chicago considerably more important as a point of rail-water interchange, because it would be the nearest port to the interior United States served by deep-draft vessels.

All of the rail-water interchange of traffic in the metropolitan area involves break of bulk, and two distinct groups of facilities have been provided for the handling of the traffic. Bulk commodities are handled principally along the Calumet River in South Chicago, or at nearby Indiana Harbor and Gary. Package freight and merchandise, of decreasing importance in recent years, are principally handled along the Chicago River, close to the commercial core of the city.

principal feeders to the flow of lake commerce. The latter has always been of importance to Chicago, although its character has greatly changed.

Significance of Chicago in Rail- Highway Transshipment

The traffic interchanged between rail and highway carriers is also of considerable importance in the pattern and localization of the railway facilities. The motor truck performs a complementary transportation service to that performed by the railways. It is the economical medium for short hauls and for the assembling and distribution of shipments to and from the railways within the metropolitan area. Free pick-up and delivery of less-than-carload freight is provided by the railways, using motor trucks for the purpose. The result has been, as will be shown later, the abandonment of a number of the freight-handling facilities of the railways close to the center of Chicago and their replacement by newer and more efficient facilities near the periphery of the built-up urban area. The freight stations at such new localities are quickly accessible by motor truck without the delays caused by movement over congested city streets. The area served by each freight station, therefore, is large, and the railways are relieved of the expensive and time-consuming operation of local "trap cars" and "peddler cars" for the collection and distribution of much of the less-than-carload freight. The motor truck, therefore, is not particularly disadvantageous to the railways, particularly in the handling of small shipments. It is a very important, although recent, factor in the localization of railway freight handling facilities.

Significance of Chicago in the Rail Pattern of the Northern Interior Region

Chicago is the major railway center of the Northern Interior portion of the United States. From nearly all directions trunk lines converge upon the metropolitan area as the spokes of a wheel upon the hub. The general symmetry of the radial pattern is not greatly disturbed, in most directions, for hundreds of miles, except for the presence of similar but less important secondary nuclei. Each of the rival centers--St. Louis, Indianapolis, Toledo, Detroit, St. Paul, and others--is less advantageously situated with relation to the traffic flow of the Northern Interior and may, in a sense, be considered as tributary to Chicago (Fig. 1).

Because topographic limitations upon the location of rail-

way lines are practically absent from the Northern Interior, the rail lines form a spiderweb pattern connecting the principal cities and extending northwest to the edge of the Great Plains, west to the Front Range of the Rocky Mountains, southwest to central Missouri, south to beyond the Ohio River, and east to the western edge of the Alleghany Plateau in eastern Ohio and western Pennsylvania.

Relation to the Great Lakes and eastern trunk line routes.--

The Great Lakes, originally a major axis of east-west water-borne commerce in connection with the Erie Canal and the later railway route through the Mohawk Gap, are the only significant natural features that interrupt the general even distribution of railway lines in the Northern Interior, thereby modifying the general radial pattern of which Chicago is the center. Lake Erie and the southern end of Lake Michigan, being in a direct east-west line parallel to the greatest volume of traffic, have had very important effects upon the development of the railway pattern. Their influence is strengthened by Lake Huron, which forms a wide barrier between the middle-western United States and eastern Canada. Only around the southern shore of Lake Erie, or along its northern shore and thence across the St. Clair-Detroit River constriction between Lake Erie and Lake Huron, could railways connect Chicago and the east. Southern Michigan and northern Indiana, the territory between Lake Erie and Lake Michigan, are crossed, therefore, by practically all of the eastern railways that converge at Chicago, forming a major axis in the national railway pattern. The area has one of the densest concentrations of railway lines in the United States.

Rounding Lake Michigan, the Pere Marquette Railway links Chicago with the southern peninsula of Michigan.¹ The Canadian National-Grand Trunk system, also rounding Lake Michigan, and crossing into Canada under the St. Clair River near the southern end of Lake Huron, connects Chicago with southern Michigan and with eastern Canada.²

¹The Pere Marquette, which had previously developed a network of lines on the southern peninsula of Michigan, first operated trains to Chicago in December, 1903. For a history of the system see Paul Wesley Ivey (The Pere Marquette Railway Company [Lansing: Michigan Historical Commission, 1919], pp. 203-461).

²The Grand Trunk Western Railway, an American subsidiary of the Canadian National system, reached Chicago in 1880-81,

Most important of the eastern railways, the three great trunk line routes between Chicago and the east coast seaports and industrial centers dominate the Great Lakes railway axis. They are: the New York Central with its subsidiary the Michigan Central, the Pennsylvania's main line, and the Baltimore and Ohio, connecting Chicago with Boston, New York, Philadelphia, Baltimore, and Washington via the Mohawk Gap, the Juniata River, and the Potomac River routes across the Appalachian barrier. The Michigan Central, rounding Lake Michigan, crosses into Canada through a tunnel under the Detroit River and parallels the north shore of Lake Erie to Buffalo, where it connects with the main line of the New York Central for the east. An important connection of the Michigan Central is the Canadian Pacific at Windsor, Ontario, on the Detroit River, from whence trains operate directly to eastern Canada.¹ Branches of the Michigan Central serve the greater part of Michigan's southern peninsula. The New York Central main line, the western half of which constitutes the former Lake Shore and Michigan Southern, after rounding the southern end of Lake Michigan, strikes directly east to Toledo, Ohio, and parallels the southern shore of Lake Erie through Cleveland to Buffalo, where, joined by the Michigan Central, it continues eastward through the Mohawk Gap to Albany on the Hudson River.² At Albany it divides, with one line paralleling the east bank of the Hudson to New York City, and another, the subsidiary Boston and Albany, climbing the

entering the city over its present circuitous route. The Chicago and Western Indiana furnished part of its entrance route and its passenger terminal facilities. Being one of the later trunk lines, the Grand Trunk was unable to secure at reasonable cost a more favorable route into Chicago. In 1881 it became affiliated with the Great Western Railway of Canada, thereby connecting Chicago with peninsular Ontario. For a discussion of the railway lines connecting Chicago with Canada see William J. Wilgus (The Railway Interrelations of the United States and Canada [New Haven: Yale University Press, 1937]).

¹The connection was completed in 1890 (Wilgus, op. cit., p. 43).

²The line, the original New York Central Railroad between Albany and Buffalo, is the "water level route" which follows the earlier canal route between the Hudson River and Lake Erie. It was formed in the 1840's and 50's by consolidation of short end-to-end lines (Frank Walker Stevens, The Beginnings of the New York Central Railroad [New York: G. P. Putnam's Sons, 1926]).

Berkshire Mountains on its way to Boston.¹ Another New York Central route east of Buffalo closely parallels the main line to Albany and New York City along the west shore of the Hudson.²

Closely paralleling the New York Central from Chicago to Buffalo is the competing New York, Chicago and St. Louis Railroad (Nickel Plate Road), which also follows the south shore of Lake Erie.³ It, however, does not carry so great a volume of traffic because its single track is much less efficient than the line of the New York Central, which has four tracks for the greater part of its length.

The Pennsylvania's main line east from Chicago crosses Ohio a few miles south of Lake Erie and dips southeastward to Pittsburgh, where it joins a line from St. Louis.⁴ The four-track line from Pittsburgh to Harrisburg, descending from the Alleghany Plateau via the famous Horseshoe Curve and crossing the ridges and valleys of the Alleghanies via the Juniata River, is of vital importance as one of Chicago's principal rail routes. At Harrisburg the line divides, one route continuing to Philadelphia and New York, the other to Baltimore and Washington.

The Baltimore and Ohio Railroad, the third principal east-west link serving Chicago,⁵ passes through Pittsburgh and follows

¹The original connection between Albany and New York was by boat. The Hudson River Railroad was opened in 1851 and consolidated with the New York Central in 1869. The Boston and Albany was completed in 1842. Its surveyor was Richard P. Morgan, who later surveyed the route of Chicago's first railway, the Galena and Chicago Union.

²The West Shore Railroad was built in the early 1880's by the Pennsylvania Railroad to compete with Vanderbilt's New York Central. After a rate war it passed into control of the latter.

³The Nickel Plate was built to compete with the New York Central, with the idea of its sale to the Central at a fabulous price. That object was never accomplished.

⁴The original Pennsylvania Railroad extended from Philadelphia to Pittsburgh and grew by absorbing feeder lines. It secured control of a Chicago feeder, the Pittsburgh, Fort Wayne and Chicago, before the latter was completed to Chicago in 1857. For a description of the expansion of the Pennsylvania system see H. W. Schotter (*The Growth and Development of the Pennsylvania Railroad Company* [Philadelphia, 1927]).

⁵The line was completed to Chicago in 1874. For its history see Edward Hungerford (*The Story of the Baltimore and Ohio Railroad* [2 vols.; G. P. Putnam's Sons, 1928]).

the courses of the Alleghany and Potomac rivers to Washington and Baltimore.¹ From Washington to New York it closely parallels the heavy-traffic electrified line of the Pennsylvania Railroad. Both serve the ports and industrial cities of Baltimore, Wilmington, Chester, Philadelphia, and New York.

Another railway between Chicago and the eastern seaboard, the Erie, also is greatly affected by the location of the Great Lakes, because it was originally constructed to connect the Hudson River with Lake Erie and was later extended to Chicago.² Its westward extension being constructed later than the entrance of most of the eastern lines to the Lake Michigan metropolis, the Erie was unable to secure as direct a route. Consequently it swings in a wide arc across north central Indiana, then northeast across Ohio and western Pennsylvania, and across the "southern tier" of New York State. Although the Erie is not of major importance as a passenger carrier³ it carries considerable heavy freight, express, and perishable traffic.

All of the eastern railways that reach Chicago must round the southern shore of Lake Michigan. The greatest concentration

¹For a detailed description of the route see George P. Grimsley (The Baltimore and Ohio Railroad, International Geologic Congress, Guidebook XXX [Washington: Government Printing Office, 1933]).

²The Erie Railroad's original line from Piermont Pier, New York, on the west bank of the Hudson River a few miles above New York City, to Dunkirk, New York, on Lake Erie, was completed in 1851. The line was built with a six-foot gauge, and was not converted to standard gauge for many years. A plan was nearly carried out in 1869 whereby the Erie, over a subsidiary line, was to reach Toledo, whence its cars would operate through to Chicago over the Michigan Southern (Henry M. Flint, The Railroads of the United States: Their History and Statistics [Philadelphia: John M. Potter and Company, 1868], pp. 211-12). The plan fell through when Vanderbilt secured the control of the Lake Shore and Michigan Southern and did not want to divert traffic from the New York Central at Buffalo. Due to the original wide gauge on the Erie, the present track clearances are very wide and the railway can handle many shipments of unusual bulk that the other eastern lines cannot carry.

A subsidiary line of the Erie, the Chicago and Atlantic, now the Chicago and Erie, was completed westward to Hammond, Indiana in 1882, and secured entrance to Chicago's Dearborn Station over the line of the Chicago and Western Indiana.

For a history of the early Erie Railroad see Edward H. Mott (Between the Ocean and the Lakes, the Story of Erie [New York: John S. Collins, 1889]).

³For many years the Erie specialized in immigrant traffic between New York and Chicago.

of through railway rights-of-way in the metropolitan area is, therefore, in the southeastern part, through which the railways must pass in rounding the lake. Except for an insignificant amount of long-haul American freight using the Canadian lines north of Lake Superior, a very minor volume of traffic crossing the St. Mary's River at Sault Ste. Marie, and the traffic that crosses Lake Michigan on the car ferries, the east-west traffic of the northern half of the United States is concentrated in southeastern Chicago along the lake shore.

Most of Chicago's railway lines strike directly across the country irrespective of section-lines or minor topographic irregularities such as the undulating moraines of Indiana. Few curves and very slight grades characterize the railways in most directions, and particularly to the south and southeast.¹ The land is flattish glacial till, lacustrine and outwash plains. The till is relatively unconsolidated and thus easily handled in the construction of cuts and fills, which are nowhere very high or deep. The rivers are not intrenched deeply and therefore are easily bridged. Thus long stretches of tangent track and low gradients predominate on the railways.

Relation to southeastern routes.--Chicago is well supplied with railways to the southeast. In that direction, the lines between Chicago, Indianapolis, and Cincinnati may be considered as forming the major axis. The Pennsylvania system operates a network in Indiana, forming a number of alternative routes to Cincinnati via Fort Wayne, Richmond, Logansport, Indianapolis, and other points. The New York Central system over its "Big Four Route" operates direct service to Cincinnati. The Chicago, Indianapolis and Louisville (Monon) Railway also connects those points.² From

¹As early as 1854 it was pointed out that a railway could be constructed between Cincinnati and Chicago so directly that the air line distance need be exceeded by only five miles (Report of Conditions and Prospects of Cincinnati and Chicago Railroad [Cincinnati: John D. Thorpe, 1854], p. 3).

Typical of grades on the railways to the south and southeast of Chicago are those of the Chicago, Indiana and Southern, a part of the New York Central system, which do not exceed four-tenths of one per cent.

²The Chicago, Indianapolis and Louisville Railway consists of two principal routes, one between Chicago and Indianapolis and one between Michigan City, Indiana, and Louisville, Kentucky. The two lines intersect at Monon, in north central Indiana, thereby making possible through operation between Chicago and both Indianapolis and Louisville. The former route is that of the original

Indianapolis lines radiate to all parts of the territory between Ohio and Missouri, and to the south of the Ohio River.¹ From Cincinnati lines serve the entire southeastern United States, and a major traffic axis is formed by the Norfolk and Western and the Chesapeake and Ohio systems which serve the coal fields of West Virginia and eastern Kentucky and extend to tidewater at the southern end of Chesapeake Bay.

Relation to southern routes.--Several railway lines connect Chicago with the territory directly to the south. The Illinois Central's main line reaches the Ohio River at Cairo, the southernmost extremity of Illinois,² and extends into western

Louisville, New Albany and Salem Railroad, construction of which was begun at New Albany, across the Ohio River from Louisville, in 1848. Financial difficulties retarded completion of the northern portion of the line, however. The company had obtained a valuable charter right to construct a line anywhere in Indiana. When the intense rivalry of the Michigan Central and the Michigan Southern to be the first eastern line to secure entrance to Chicago made rapid construction of a line around the southern end of Lake Michigan in Indiana necessary, the right to do so was refused the former company by the Indiana legislature. The Michigan Central was enabled to build its line by the use of the Louisville, New Albany and Salem charter in return for a cash payment that enabled the latter railway to complete its line northward to Michigan City (Michigan Central Railroad Company, Annual Report, 1852).

The Monon's main line between Hammond and Indianapolis was opened in 1882 as the Louisville, New Albany and Chicago railroad. Entrance to Chicago was secured over the new line of the Chicago and Western Indiana. It was the same route as that used by the Erie, which also reached Hammond in 1882.

For a detailed history of the Monon system see Frank F. Hargrave (A Pioneer Indiana Railroad: The Origin and Development of the Monon [Lafayette, Indiana, 1932]).

¹As early as 1852, when the first eastern railways reached Chicago, Indianapolis was served by five lines. The early development of that city as a railway center reflects the earlier settlement and the greater population density of the territory along the Ohio River as contrasted to that along the Great Lakes. In 1852 Indianapolis opened a Union Station, said to be the first in the United States.

²The Illinois Central Railroad was begun in 1852 under the terms of a land grant by the Federal government to the State of Illinois. The original system consisted of a line between Cairo and Carbondale, with two diverging lines, one to Chicago and one to the northwest corner of Illinois. For the history of the system see Howard Gray Brownson (History of the Illinois Central Railroad to 1870 ["University of Illinois Studies in the Social Sciences, IV, Nos. 3 and 4"; Urbana: University of Illinois, 1915]). Also: Lewis E. Severson, "Some Phases of the History of the Illinois Central Railroad Company since 1870" (Ph.D. dissertation, Department of History, University of Chicago, 1930); Carleton J. Corliss,

Kentucky and Tennessee, Mississippi, Alabama, and Louisiana, reaching the Gulf of Mexico at New Orleans and Gulfport,¹ and, over connecting lines, at several other points. The Chicago, Indiana and Southern, a part of the New York Central system, extends due south from Indiana Harbor, just to the east of Chicago, to the coal fields of southern Indiana and Illinois.² The Chicago and Eastern Illinois Railroad, likewise, serves southern Illinois and Indiana as far as the Ohio River, with coal furnishing the principal traffic. The latter line is also an important carrier of passengers, and it connects with the Louisville and Nashville system at Evansville, Indiana, on the Ohio River, thereby linking Chicago with a vast territory in the southern and southeastern portions of the United States.

Relation to southwestern routes.--To the southwest two major axes of railways exist, one to St. Louis and one to Kansas City. As in most other directions, topographic irregularities are few and unimportant and the railways have been constructed directly across the country with long stretches of tangent track. Some of the lines to St. Louis and Kansas City, however, form parts of larger systems, and in order to connect with other parts of their systems do not necessarily follow direct routes between Chicago and St. Louis or Kansas City. Some of the railways cross and recross several times. To St. Louis four railways offer direct passenger and freight service. They are the Alton, the Illinois Central, the Wabash, and the Chicago and Eastern Illinois. To Kansas City a large number of railways operate, although the

Trails to Rails: A Story of Transportation Progress in Illinois (2d ed.; Chicago: Illinois Central Railroad Co., 1937); and Paul Wallace Gates, The Illinois Central Railroad and Its Colonization Work (Cambridge: Harvard University Press, 1934). The system is described by C. H. Markham ("The Development, Strategy, and Traffic of the Illinois Central System," *Economic Geography*, II [1926], 1-18), and Organization and Traffic of the Illinois Central System (Chicago: Illinois Central Railroad Co., 1938).

¹The principal Illinois Central lines south of the Ohio River were constructed as independent railways, and were later merged to form a through route from Chicago to the Gulf of Mexico (Thomas D. Clark, A Pioneer Southern Railroad from New Orleans to Cairo [Chapel Hill: University of North Carolina Press, 1936]).

²The Chicago, Indiana and Southern is an important route for coal to the industries of the Calumet district on the south shore of Lake Michigan. It was completed in 1906, the same year in which the steel mills at Gary were put into production.

greatest volume of traffic is carried by the Santa Fe, which is the eastern extension of the system operating more miles of track than does any other American railway.¹

St. Louis and Kansas City are the two great concentration and distribution points for the territory to the southwest. From both cities railways radiate in several directions, feeding traffic to the lines that connect those cities with Chicago. Thus in one sense St. Louis and Kansas City may be regarded as subsidiary centers to Chicago, although of course not all of the traffic that passes through them also passes through Chicago, since there are direct lines between St. Louis and the east as well as from Kansas City to St. Louis.

Relation to western routes.--Directly west of Chicago the twin city agglomeration of Omaha and Council Bluffs occupies a position relative to Chicago analogous to that of St. Louis and Kansas City. The Omaha gateway rivals Kansas City as the principal trans-Missouri River railway crossing and shares with St. Louis and Kansas City the traffic moving between the east and Chicago on the one hand and the west and southwest on the other. Whereas the traffic moving through St. Louis largely goes directly to and from the east with only a minor part also moving through the Chicago terminal district, and although the traffic through Kansas City goes through either St. Louis or Chicago, the traffic from Omaha moves to or from either Chicago or St. Louis. with by far the greater volume through Chicago. Omaha is the western

¹The Santa Fe is one of the few western railways that were constructed eastward to Chicago. Before 1886 the Santa Fe had developed an extensive system of lines west of the Missouri River gateway at Kansas City. Traffic was there interchanged for movement to and from the east including Chicago. A number of lines that previously had their western terminals at the Missouri River were building westward, invading territory in Kansas, eastern Colorado and neighboring states that had been exclusively served by the Santa Fe. The line between Kansas City and Chicago was built to meet the competition and to overcome the handicap that the Santa Fe would have had without a line eastward to the major gateways (Atchison, Topeka and Santa Fe Railway, Annual Report, 1886).

The Santa Fe's route between Streator, Illinois, and Chicago consists of the old Chicago, Pekin and Southwestern, completed in 1886, which the Santa Fe purchased and improved. The line from Streator to Kansas City was new. Through traffic on the Santa Fe between Chicago and west of Kansas City was first carried in the spring of 1888.

A comprehensive history of the Santa Fe is that of Glenn Danford Bradley (The Story of the Santa Fe [Boston: The Gorham Press, 1920]).

terminal of several railways connecting that city with Chicago.¹ It is the eastern terminal of the extensive Union Pacific system which serves the west from the Missouri River to the Pacific coast and from the Canadian border to southern California.

Council Bluffs, directly across the Missouri River from Omaha, was established as the eastern end of the Union Pacific, the first of the "transcontinental" railways and still one of the most important.² The preëminence of the westward connection, its affiliation with the Southern Pacific,³ and its eastern connections, gave rise to the name "Overland Route" to describe the most central railway route between Chicago and the Pacific. Many lines compete at Omaha for the traffic between the Union Pacific and Chicago, but the great bulk of the freight traffic moves between the eastern end of the Union Pacific and Chicago over the Chicago and North Western and the Illinois Central systems, and practically all of the passenger traffic over the Chicago and North Western.

In addition to the Union Pacific several other western lines pass through Omaha and Council Bluffs. Some of them, notably the Burlington and the Missouri Pacific, not only operate to both east and west with through traffic over their own lines but also interchange with the eastern lines that terminate at the Missouri River, namely with the Chicago, Milwaukee, St. Paul and Pacific, the Chicago Great Western, and the Illinois Central. The interchange of traffic is made in order to receive for long western hauls some of the traffic of those lines originating east of Omaha. Such "short-hauling" gives rise to intense competition, to the great benefit of the speed and frequency of service between

¹Chicago and North Western, Burlington, Rock Island, Milwaukee Road, Illinois Central, Chicago Great Western, and Wabash railway systems.

²The Union Pacific was completed in 1869, soon after completion of several lines between Chicago and Council Bluffs. A vivid history of its construction is that of Grenville M. Dodge (How We Built the Union Pacific Railway, 61st Congress, 2d Session, Senate Document No. 447 [Washington: Government Printing Office, 1910]). For a description of the route see U. S. Geological Survey Bulletin 612 (Guidebook of the Western United States, Part B [Washington: Government Printing Office, 1916]).

³The Southern Pacific's portion of the "Overland Route," between Oakland, California, and Ogden, Utah, was originally the Central Pacific, completed in 1869.

Chicago and Omaha. The two cities are in a direct line between the eastern manufacturing and consuming centers on the one hand and the agricultural and grazing areas of the west on the other. Chicago and Omaha have a mutuality of interest in the east-west transcontinental traffic that is comparable to that existing between Chicago and New York in relation to the traffic between the middle west and the Atlantic seaboard.

Relation to northwestern routes.--Just as the traffic between the southeast and Chicago concentrates at the Ohio River gateways of Cincinnati, Evansville and Cairo, that of the southwest at St. Louis and Kansas City, and that of the west at Omaha, so the traffic and railway lines of the northwest concentrate at the Twin Cities of Minneapolis and St. Paul.¹ The three northern "transcontinental" railways, the Great Northern, the Northern Pacific, and the Chicago, Milwaukee, St. Paul and Pacific, connect the Twin Cities with the grazing, mining, farming, and lumbering territory of western Minnesota, the Dakotas, Montana, Idaho, Washington, Oregon, and portions of the western provinces of Canada. All but the latter of the three railways have their eastern terminals at St. Paul, while the latter extends through the Twin Cities directly to Chicago.² Over the tracks of the Minneapolis, St. Paul and Sault Ste. Marie (Soo Line) the Canadian Pacific traffic that does not pass north of Lake Superior or by steamship across that lake is concentrated at the Twin Cities, from whence it moves either through northern Michigan and the Sault Ste. Marie gateway, or through Chicago. In addition to the "transcontinental" railway lines, three lines northwestward from the Twin Cities reach Winnipeg, which in turn is the great railway center for the wheat lands of western Canada. Three lines also connect the Twin Cities with the Twin Ports of Duluth and Superior, the major points of concentration for the ore traffic of the Lake Superior ranges.³ All traffic that is destined for, or that originates in, the east

¹Richard Hartshorne, "The Twin City District, A Unique Form of Urban Landscape," Geographical Review, XXII (1932), 431 ff.

²The Burlington carries most of the through traffic between the eastern ends of the Northern Pacific and Great Northern at St. Paul, and Chicago.

³George H. Primmer, "Railways at the Head of Lake Superior," Economic Geography, XIII (1937), 269-80.

and southeast, with but minor exceptions other than iron ore, passes through the Twin Cities, and most of it also passes through the Chicago metropolitan area. Consequently the traffic between the Twin Cities and Chicago is heavy and the competition for it is intense. Three principal railways share most of the traffic. They are the Chicago, Burlington and Quincy, the Chicago, Milwaukee, St. Paul and Pacific, and the Chicago and North Western. The latter operates two main routes between Chicago and the Twin Cities, one through Milwaukee and the other through Madison, Wisconsin. The Chicago, Milwaukee, St. Paul and Pacific operates a main route through Milwaukee and across Wisconsin to the Mississippi River at La Crosse, thence up the west bank of the river. The Burlington route follows the east bank of the Mississippi from St. Paul to Savanna, Illinois, directly west of Chicago. On the three railways move huge tonnages of freight, both to and from intermediate points and beyond the Twin Cities. Passenger service ranks among the world's fastest and includes some of the best known of the newer type streamlined trains.

In addition to the three principal railways, several others also operate freight service between Chicago and the Twin Cities, but over less direct routes.

Significance of the Outer Gateways to Chicago

The gateways--Cincinnati, Louisville, Evansville, Paducah, Cairo, St. Louis, Kansas City, Omaha, Sioux City, the Twin Cities and others of lesser importance on the Great Lakes, the Ohio, Mississippi and Missouri rivers--perform an important service for Chicago in concentrating the traffic from many points of origin and in distributing it to many destinations, thereby enabling long through trains to be operated between the gateways and Chicago without major intermediate switching or reclassification of the cars.¹ In addition to handling the heavy local traffic of the territory between Chicago and those gateways, the roads radiating from Chicago to the outer gateways may also be considered as "bridge" lines for through traffic concentrated from and distrib-

¹For a description of the competitive methods by which the distribution of inbound and outbound traffic is apportioned and interchanged among the various railways that serve the gateways and other competitive points see Julius Grodinsky (Railroad Consolidation [New York: D. Appleton and Co., 1930]).

uted to many radial lines at each end.¹ Long fast freight trains and frequent fast passenger trains, therefore, are available at least as far as the nearest major gateway from Chicago in each direction. The gateways, therefore, may be considered as determining the outer borders of the territory within which Chicago is the primary railway center (Fig. 1).

¹A "bridge" line is a railway line that is primarily an intermediate carrier, receiving and delivering traffic from and to connecting railways at either end, with but a small relative volume of traffic originating or terminating on its own line.

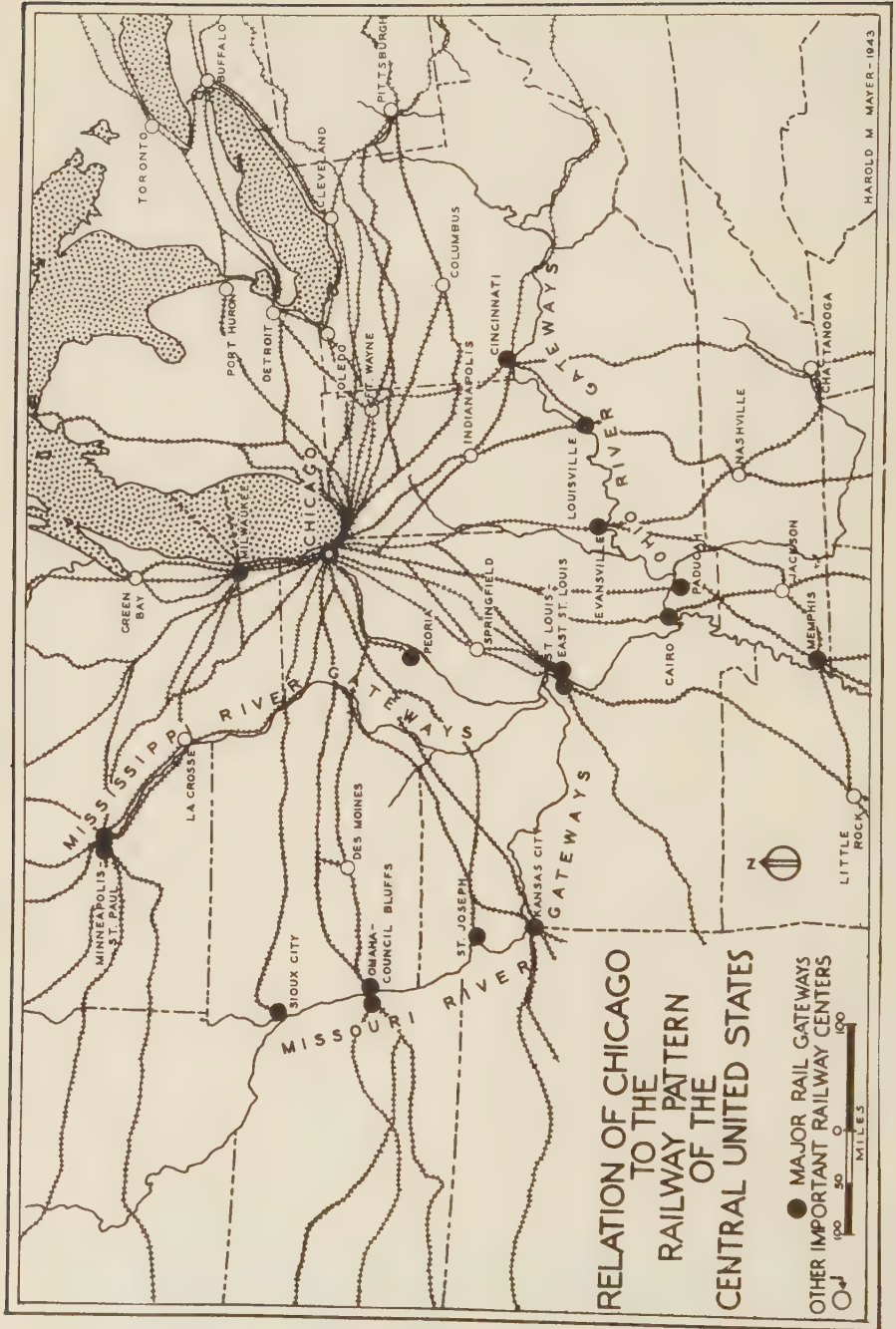


Figure 1

CHAPTER II

THE OUTER RAILWAY APPROACHES TO METROPOLITAN CHICAGO, AND THE OUTER BELT LINE

The dominant impression that one obtains upon first inspection of a map showing the railway pattern within an area extending for 40 to 50 miles in nearly every direction from the central part of Chicago (Fig. 2) is that of a number of radial lines intersected by a circumferential line. Except for the portions of the radials close to the center of Chicago, those lines are here called the outer railway approaches to metropolitan Chicago, and the circumferential line is commonly known as the Chicago Outer Belt Line.

The Outer Railway Approaches to Metropolitan Chicago

The radial outer approaches of the railways to metropolitan Chicago seem, at first glance, to exhibit no definite pattern other than the general radial arrangement and the more intense concentration of lines around the southern end of Lake Michigan. No pronounced topographic effect is evident upon the pattern of railways approaching Chicago. In that respect, Chicago is in marked contrast to most other major railway centers, where differences in elevation of the land surface strongly channel the railway approaches into a limited number of routes. No mountains, rivers, hills, or valleys restrict the routes of approach as in the case of Los Angeles,¹ Salt Lake City,² Pocatello,³ St. Louis,⁴

¹John H. Kemler, "The Railway Entrances and Exits to Los Angeles," Economic Geography, XVI (July, 1940), 312-14.

²Chauncey D. Harris, Salt Lake City, A Regional Capital (Ph.D. dissertation, Department of Geography, The University of Chicago [Chicago: Private Edition, Distributed by the University of Chicago Libraries, 1942]). The dissertation describes the railway approaches to the city.

³Wrigley, op. cit.

⁴Mayer, op. cit.

Duluth-Superior,¹ the Twin Cities,² or the principal railway centers of eastern United States. Only Lake Michigan, and to a very minor extent the highest of the moraines that partially encircle the metropolitan area, affect the regularity of the railway pattern. Close to the center of Chicago, the Chicago River and its branches do, however, exert an effect upon the location of the terminal facilities far out of proportion to the relatively small sizes of those streams.

With the exception of the diversions necessitated by Lake Michigan, the railway approaches to Chicago are, in general, direct. The few somewhat circuitous approaches of main-line railways are explained by the more favorable connections for interchange of traffic that they thereby secured.

Relation of routes to surface configuration and drainage.—

The relationships of the railway approaches of Chicago and its metropolitan area to the surface configuration, drainage, and other natural conditions are general and subtle rather than specific and direct. The relief features in and near the area are not pronounced. The percentage of the land in slopes within the metropolitan area and the bordering territory is low and the slopes are, for the most part, gentle. No major water barriers cross the metropolitan area. The principal streams, the Chicago River and its branches, the Calumet River, the Des Plaines River, and the Fox River, are in no place more than a few hundred feet wide. They have for the most part low banks and are thus easily bridged.

The City of Chicago is located on a flat lacustrine plain, crescentic in shape, bordering the southwestern corner of Lake Michigan. That plain, the bottom of former glacial Lake Chicago, the predecessor of Lake Michigan, extends for approximately 40 miles along the lake shore, and is about 15 miles wide at its widest point.³ The "Loop," or central business district of Chicago, is located near the mouth of the Chicago River, the two branches of which, converging about a mile west of the former outlet into the lake, form important drainage channels for the plain.

¹Primmer, *op. cit.*

²Hartshorne, *op. cit.*

³J Harlan Bretz, *Geology of the Chicago Region, Part I*, Illinois Geological Survey Bulletin 65 (Urbana: Illinois Geological Survey, 1939), p. 57.

The flow of the river has been reversed, so drainage is southwestward toward the Illinois River. The Calumet district, the most important site of heavy industries in the metropolitan area, is located near the mouth of the Calumet River, about 16 miles south of the Loop. The mouths of the two rivers have thus been of major significance in the localization of the densest two concentrations of railway facilities in the metropolitan area.

The Chicago plain rises very gradually from the lake shore to a height, at its outer edges, of 60 feet above lake level. Parallel to the present shore is a series of three concentric elevations or steps, each approximately 20 feet higher than the one next east of it, constituting old beach lines formed during the retreat of glacial Lake Chicago.¹ The outer edge of the plain is the highest of the beach lines. None of the old beaches imposes serious difficulties upon railway construction or operation, because their rise is slight, they are spaced rather widely apart, and the sandy material of which they are composed is easily worked into slight cuts and fills which are stabilized by the planting of vegetation on the slopes. The result of the combination of physical conditions is a very slight favorable grade toward Chicago on most of the railways. It is of some significance because, on practically all of the lines, the heaviest tonnage movement is toward, rather than from, the Chicago terminal district.

The only prominent relief feature of the Chicago plain is Blue Island ridge, a north-south trending elevation approximately 7 miles west of the mouth of the Calumet River. It is about 6 miles in length, a mile wide at its widest point, and about 50 feet above the surrounding plain.² It is a former island in glacial Lake Chicago and is composed of glacial drift and the sand of old dunes, easily worked material that imposes no difficulties on railway construction. The Chicago, Rock Island and Pacific Railway from the west passes around the south end of the ridge and along its eastern edge. On the western edge, the Grand Trunk

¹For detailed discussion of the glacial history of the Chicago region see Frank Leverett, The Illinois Glacial Lobe, U. S. Geological Survey Monograph 38 (Washington: Government Printing Office, 1899).

²For description of this and other minor physiographic features see F. M. Fryxell, The Physiography of the Region of Chicago (Chicago: The University of Chicago Press, 1927).

Western Railway parallels the ridge after crossing the Rock Island in the course of a circuitous entrance route to Chicago from the southeast. That crossing of an eastern and a western railway at Blue Island furnishes one of the most direct routes of interchange between an eastern and a western railway within the metropolitan area except for the Outer Belt. The location of the ridge has affected the location of the routes of the two railways and has been largely responsible for the important intersection. Another effect of the ridge has been in the development of an attractive semi-suburban community within the City of Chicago, Beverly Hills, which is served by the Rock Island main line suburban trains, and also by a branch suburban line higher up the eastern slope, where some of the finest and most attractive homes in Chicago are located.¹

The Chicago plain is shut off on all sides, except for Lake Michigan, by a belt of higher gently undulating land, the Valparaiso moraine. That topographic feature, which rises from the outermost of the old beach lines to an extreme height of nearly 200 feet above Lake Michigan or 140 feet above the edge of the plain, is also composed of easily worked unconsolidated glacial deposits. The grades of the railways across the moraine, therefore, are slight.² In some cases the railways crossing the moraine have, subsequent to their original construction, reduced their operating costs by cutting deeper into the summit of the moraine, thus reducing further their earlier slight grades. For example, the Illinois Central, in crossing the summit of the moraine at Monee, 33 miles south of its Chicago terminus, formerly had a northbound grade of 28 feet per mile, which, while not serious, made necessary the occasional use of a helper engine on the heaviest freight trains. Subsequently the grade was reduced to 11 feet per mile by the construction of an open cut 26 feet deep across the summit.³ That is an exceptional case. In general, the effect of the moraine is slight.

¹Roger C. Fontaine, "Beverly," Forty-four Cities in the City of Chicago (Chicago: Chicago Plan Commission, 1942), pp. 73-75.

²Bretz (*op. cit.*, p. 47) shows a number of railway profiles across the moraine.

³Information obtained from inspection of profiles in the possession of the Illinois Central Railroad Company.

The Lake Border group of moraines, north of Chicago, affect but slightly the location of the railways in their vicinity. Those features extend in a north-northeast direction, rising gradually northward and ending in steep clayey bluffs at the shore of Lake Michigan in the "North Shore" suburbs, which owe much of their attractiveness to the slopes and ravines that have been eroded in the glacial deposits.¹ Between the Lake Border moraines and the Valparaiso moraine to the west is a shallow trough known as the Skokie Valley, approximately three miles in width, its eastern edge a mile from the lake shore. It is in reality a northward embayment of the Lake Chicago plain. The railways paralleling the lake shore between Chicago and Milwaukee have utilized that valley as a low-gradient route for heavy freight and fast passenger traffic, at the same time avoiding the congested suburbs along the lake.²

¹For a description of the physiographic features of the shore area north of Chicago see: W. W. Atwood and J. W. Goldthwaite, *Physical Geography of the Evanston-Waukegan Region*, Illinois Geological Survey Bulletin No. 7 (Urbana: Illinois State Geological Survey, 1908).

²Five railway lines connect Chicago with Milwaukee. Paralleling the lake shore and passing through the "North Shore" suburbs are two lines, the main Milwaukee Division passenger line of the Chicago and North Western and an electric line of the Chicago, North Shore and Milwaukee Railroad. The former was completed in 1856 and furnished the impetus for the development of many of the suburbs. The latter was completed in 1908 from Evanston to Milwaukee and reached the Chicago Loop over the elevated rapid transit line several years later. This "Shore Line" electric route now furnishes a local suburban passenger service. The through passenger trains and all freight trains of the electric railway are operated over the high-speed Skokie Valley route to the west of and paralleling the Shore Line route. The two lines join at North Chicago. The Skokie Valley route was built in order to by-pass the populated suburbs which made necessary many grade crossings and operation of the trains on the streets. The Skokie Valley route was completed in 1927. For a description of its characteristics see: D. H. Howard, "Construction of the Skokie Valley Line," *Journal of the Western Society of Engineers*, XXXII, No. 5 (June, 1927), 182-94. Closely paralleling the electric line through the valley is a steam-operated line, the freight route of the Chicago and North Western's Milwaukee Division, opened in 1905 to permit operation of heavy freight trains without passing through the North Shore suburbs. That line is described in *Railroad Gazette* (XXXIX, No. 6 [1905], 128-29). Trains operate between that line and Proviso Yard west of Chicago over the Des Plaines cutoff, described elsewhere in this dissertation. Another line between Chicago and Milwaukee, on the west side of the Skokie Valley, is the main passenger and freight route of the Chicago, Milwaukee, St. Paul and Pacific, opened in 1873.

One important naturally-formed railway route exists across the Valparaiso morainic divide. It is the Chicago River-Des Plaines River route, the former outlet of the glacial Great Lakes leading to the Illinois River and thence to the Mississippi. That outlet is a flat-floored alluvium-filled valley averaging about one-half mile in width. It crosses the divide approximately ninety feet below the level of the summit. The divide was easily overcome by the builders of the old Illinois and Michigan Canal, who utilized the route. Since the days of the early fur trade the low gradient and ease of travel across the divide by way of the "Chicago Portage" made the route an important artery of travel and trade. The route is followed by two railways that approach Chicago from the southwest, the Santa Fe and the Alton.¹ The routes of those railways differ from those of the other lines that radiate from Chicago in that the grades are less.² They are the only main-line railways that approach Chicago on the upgrade. That is because the drainage route furnishes an easy gradient, without the climb to the summit of the Valparaiso moraine, between Chicago and the Illinois-Mississippi drainage basin, which is at a lower elevation than the city.

¹The Alton Railroad connects Chicago with St. Louis and Kansas City. It is an important passenger route and also carries a considerable volume of freight between Chicago and the territory to the south and southwest of the Missouri River. The line furnished the first rail connection between Chicago and the southwest. It was completed between Alton, on the Mississippi River, and Joliet in 1853, when through trains were first operated between Alton and Chicago, using the rails of the Rock Island line northeast of Joliet. The first train operated into Chicago over the "Chicago Portage" route on January 1, 1858. The Alton paralleled the canal route between Chicago and Joliet and thereby could serve the numerous industries that developed along the waterway. The coal fields south of Joliet were, for the first time, tapped by a railway, thereby opening to Chicago an important source of fuel. With the opening of the line much of the trade of central Illinois that formerly was attracted to St. Louis because of cheap transportation on the Illinois River was diverted to Chicago. The railway became a major carrier of grain and livestock. In 1930, after a receivership, the Chicago and Alton was purchased by the Baltimore and Ohio and was reorganized as the Alton Railroad Company. Many economies are secured in the Chicago terminal district because of joint use of a number of facilities by the two railways. Passenger terminals, however, are not co-ordinated.

²The maximum grade on the Santa Fe between Joliet and Chicago is only 13.7 feet per mile, and that only for a short distance.

The insignificance of surface configuration in shaping the railway pattern of the metropolitan area is demonstrated by the absence of railways in the Calumet Sag. The Sag is a valley similar to that of the Des Plaines River with which it is connected at its western end. It furnishes a direct route, with almost no gradient, between the important Calumet industrial area of South Chicago, Indiana Harbor, Hammond, and Gary, and the Des Plaines-Illinois valley. In spite of the strategic location of the Sag and its suitability as a railway route, no railway utilizes it. Indeed, the Sag has little effect even upon the routes of the belt and other railways that cross it. Even between Indiana Harbor and Joliet, two of the major industrial satellites of Chicago between which the Sag would furnish a natural railway route, the lines are on the upland.

The absence of major surface features to channel and control the formation of the railway pattern has had an important effect upon the relationship between the railway pattern and the general pattern of land use and urbanization of metropolitan Chicago. The railway routes, and not surface configuration, have formed the principal axes along which settlement has taken place and along which urban decentralization has been carried on. Of particular significance is the close relationship between the railways and the configuration of the outer boundary of urban development, which has taken place most rapidly along the railway routes, thereby forming prongs or extensions of urbanization.¹

The Chicago Outer Belt Line

Next to the radial lines, the most conspicuous feature of the railway pattern revealed by a map of the railways within 40 or 50 miles of Chicago is the Outer Belt Line.

Relation of the Outer Belt Line to the Chicago Terminal District.--The trunk line railways enter what is generally called the Chicago Terminal District at the points where they are intersected by the Chicago Outer Belt Line, the Elgin, Joliet and

¹For a detailed description of one of these prongs see: Robert C. Klove, The Park Ridge-Barrington Area, A Study of Residential Patterns and Problems in Suburban Chicago (Ph.D. dissertation, Department of Geography, The University of Chicago [Private Edition, Distributed by the University of Chicago Libraries, 1942]).

Eastern Railway, at a distance of 25 to 40 miles from the commercial core of Chicago. The railway facilities enclosed within the crescentic-shaped area bounded by that railway and the shore of Lake Michigan from Gary to Waukegan constitute a definite functioning unit within the general railway pattern of the Chicago region.¹ As the organs of an animal are located at those points in relation to the entire organism where they can best carry out their specialized roles in the life process, so each of the individual railway facilities within the Chicago Terminal District is located at the point where it can now, or could at the time of its construction, best perform its specialized function in relation to the general pattern and functioning of metropolitan Chicago on the one hand and the pattern of railway facilities and traffic flow on the other. As in a living organism, too, there are vestigial organs in the railway organism, facilities that have outlived their usefulness or are located at places where they cannot now efficiently perform their functions.

For convenience in discussing, in this and later chapters, relationships between location and function of each type of facility within the terminal district, the railway facilities are classified, somewhat arbitrarily, as:

¹ The line of the Outer Belt is sometimes considered as marking the outer limit of metropolitan Chicago. Due to the various factors that go to make up the pattern of railways, it seems advisable, in this dissertation, to consider the area in terms of the particular factors affecting railways. Thus the metropolitan area has no definite fixed boundaries, but varies in accordance with each of the factors affecting the railways. For example, in relation to the suburban passenger traffic and the facilities for handling it the outer boundary of the area is considered to be the line connecting the points most distant from Chicago to which suburban commuter trains are operated and to which special commutation fares apply. That line extends from Lake Michigan at Waukegan to Lake Michigan at Gary, by way of Elgin, Aurora, Joliet, and Matteson, with a southeastern prong to Valparaiso and Chesterton, Indiana. The territory thus delimited has an average radius of about forty miles from its center in the Chicago Loop. Owing to the lake shore the area is crescentic. In considering the freight facilities and traffic on the other hand, the metropolitan area is taken to be that territory within the Chicago Outer Belt Line, which forms a rough arc through about 270 degrees, also interrupted by the lake in the northeast sector, and with an average radius from the Loop of about thirty-five miles. The area included between the lake shore and the Outer Belt Line embraces about 1,750 square miles, within which there are more railway facilities and more miles of trackage than in any other area of comparable size in North America, and probably in the world.

- a) the Outer Belt Line,
- b) Outer classification yards of the trunk lines,
- c) belt lines, other than the Outer Belt, with their yards, terminals, and other facilities,
- d) inner freight yards of the trunk line railways,
- e) industrial railways and switching lines with their facilities,
- f) trunk line routes of approach to the commercial core of Chicago, within the area enclosed by the belt lines,
- g) freight facilities located near the center of Chicago
- h) passenger coach yards,
- i) shops, roundhouses and associated facilities, and
- j) the major passenger terminals in Chicago.

While in some cases there are overlapping functions, the place of each of the types of facilities in the general pattern of the railways is sufficiently distinct to warrant separate classification.

The Chicago Outer Belt Line, the Elgin, Joliet and Eastern Railway, constitutes, in its functions and location, a unique type of facility, distinct from the other belt railways. From Porter, Indiana, to Waukegan, Illinois, it is 130 miles in length, considerably longer than any of the other belt lines of the metropolitan area. For most of its extent it is more than twice as far from the commercial core of Chicago as are any of the other belt railways. It passes, for the most part, through rural areas in contrast to the other belt lines, which are largely located in the built-up area on the periphery of the City of Chicago. It is unique further in that it is the only belt line that crosses and has direct physical track connection with all of the trunk lines serving Chicago.

Functions of the Outer Belt Line.--Like the other belt lines the Elgin, Joliet and Eastern Railway serves as a connecting link over which through freight traffic moves between the various radial lines, and as an intermediate carrier or terminal line for freight originating or terminating within the Chicago Terminal District.¹ The functions and location of the Outer Belt Line are greatly affected by its ownership and control by the United States Steel Corporation. Although it is a common carrier, a large proportion of its traffic moves to, from, and among the numerous plants of its parent corporation. To a great extent it is a local

¹For a discussion of the history and functions of the belt railways of metropolitan Chicago, supplementing the discussion of their patterns here presented, see: Pei-Lin Tan, The Belt and Switching Railways of the Chicago Terminal Area (Ph.D. dissertation, School of Business, The University of Chicago, 1931).

inter-plant facility as well as a belt line. It handles approximately 30,000,000 tons annually, or about 22 per cent of the total traffic of all belt and switching railways in the metropolitan area,¹ although it is the policy of the road to discourage local switching traffic for other than its parent organization.² The unique function of the Outer Belt Line as a road-haul carrier of through traffic around the outer edge of the terminal district is further demonstrated by the fact that in 1938 the average haul per revenue ton was 45 miles,³ considerably longer than that of any other metropolitan belt line. The long average haul reflects, of course, the peripheral location of the line.

Relationship to the Calumet District.--The Calumet district, from South Chicago to Gary inclusive, furnishes the principal traffic of the Outer Belt Line. Several lines operated by the Elgin, Joliet and Eastern connect the steel, oil, cement, and other plants of the district with the main line of the railway. The most important of such connections is the double-track route of the former Chicago, Lake Shore and Eastern Railway, which is located close to the shore of the lake on the narrow strip of land lakeward of the New York Central and Baltimore and Ohio railroads. The line begins within the South Chicago works of the Carnegie-Illinois Steel Corporation, also a United States Steel subsidiary as is the Outer Belt, crosses the Calumet River, and extends in a southeasterly direction for sixteen miles to Gary, serving several United States Steel plants along the lake,⁴ as well as other industries, notably oil refineries and chemical plants. The eastern end of the line is within the Gary plant of Carnegie-Illinois. Inter-plant traffic constitutes the greater part of that division of the Outer Belt Line.

The traffic originating and terminating in the Calumet

¹ Interstate Commerce Commission, Bureau of Statistics, Comparative Statement of Railway Operating Statistics, Years 1938, 1937, and 1936 (Washington: Government Printing Office, 1939), p. 44.

² John B. Appleton, The Iron and Steel Industry of the Calumet District ("University of Illinois Studies in the Social Sciences, XIII, No. 2"; Urbana: University of Illinois, 1925).

³ Interstate Commerce Commission, op. cit.

⁴ The plants include the South Chicago and Gary works of Carnegie-Illinois, the American Bridge works at Gary, and the Universal Atlas Cement plant at Buffington.

district is classified and switched at the Kirk Yards, in the western part of Gary.¹ In those yards, which have a capacity of 6,000 cars, are sorted the cars having shipments to and from the Calumet industries, eastern connections, and the main-line trains of the Outer Belt Line, most of which begin and terminate in the Kirk Yards.² The location of the yards is particularly favorable for expeditious handling of traffic, because transfer trains can reach the Calumet plants with a minimum of mileage, and cars can be received from or delivered to the Outer Belt Line's lake shore route, the main Outer Belt line, and the eastern trunk lines directly. Several of the latter pass close to the yards. The main line of the Outer Belt is reached by a direct north-south line of about eight miles from the west end of Kirk Yard to Griffith, Indiana.

Connections with eastern railways.--The connections between the Elgin, Joliet and Eastern and the principal eastern trunk line railways are made near Gary. The eastern extremity of the Outer Belt Line is at Porter, Indiana, where connection is made with the New York Central, Michigan Central, and Pere Marquette. The line extends from there in a southwesterly direction to Hobart, crossing the Baltimore and Ohio and the Wabash. At Hobart, connection is made with the Pennsylvania and Nickel Plate roads. From Hobart to Griffith, twenty miles west of the Porter terminus, the line extends almost due west.

Very heavy traffic is carried on the portion of the Outer Belt Line that extends from Griffith to Joliet, a distance of thirty-six miles. In addition to traffic of the Calumet district, the line carries considerable through traffic between eastern and western railways, and interchanges traffic with the numerous north-south lines that it crosses. At Chicago Heights, the largest city between Gary and Joliet, where the Outer Belt crosses the Chicago and Eastern Illinois Railroad, many steel and chemical works feed traffic to and from the Outer Belt Line over the switch tracks of the Chicago Heights Terminal Transfer Company.³

¹Itinerary, Inspection Tour Covering Industrial Activities along the Elgin, Joliet and Eastern Railway (Chicago: Traffic Club of Chicago, 1936).

²Appleton, op. cit., p. 112.

³For an account of the railway and industrial development

Facilities at Joliet.--The principal yards, shops, and operating headquarters of the Outer Belt Line are located on the eastern edge of Joliet. In that city are numerous heavy industries, including a plant of the Carnegie-Illinois Steel Corporation, several foundries, a paper mill, and limestone quarries. The Rock Island, Santa Fe, and Alton railways intersect the Outer Belt Line, with which they interchange traffic, at Joliet.¹ The Outer Belt's shops and yards occupy 160 acres and furnish one of the principal means of employment to Joliet residents. In the shops, the heaviest locomotive repairs can be made and complete freight cars constructed. Trains are classified in the yards en route to and from both the eastern and northern divisions of the Outer Belt Line.

The localization of the Outer Belt Line's facilities at Joliet reflects the relationship of that city to the pattern of that railway system, and the relative density of traffic on its various sections. Located about fifty miles from the eastern terminals at Gary and Porter and seventy-five miles from the northern terminus at Waukegan, the yards and shops at Joliet can serve equally well the traffic in either direction with a minimum of movement of supplies, locomotives, rolling stock, and trains. The greater density of traffic on the eastern half of the line, resulting from the concentration of heavy industries in the Calumet district and the satellite cities of Chicago Heights and Joliet, and from the more numerous trunk-line connections in that section, is reflected in the location of the yards and shops somewhat closer to the eastern end than to the northern end of the Outer Belt Line. The heavy local switching to and from Joliet industries and the availability of local labor are also factors affecting and favoring the location of the facilities in Joliet.²

of Chicago Heights see: Robert B. Heinsen, "An Economic History of Chicago Heights, with Emphasis upon Its Industrial Development" (Unpublished Master's thesis, Department of Commerce, University of Iowa).

¹For a general discussion of Joliet's industries and their localization, see: William Trout Chambers, "A Geographic Study of Joliet, Illinois, an Urban Center Dominated by Manufacturing" (Unpublished Ph.D. dissertation, Department of Geography, University of Chicago, 1926).

²Ibid., p. 109.

Relation to western and northwestern railways.--Between Joliet and the railway junction at Normantown, twelve miles to the northwest, the Outer Belt Line furnishes trackage rights to the Chicago, Milwaukee, and Gary Railway. The latter is a connecting link between the principal east-west line of the Chicago, Milwaukee, St. Paul and Pacific and its subsidiary, the Chicago, Terre Haute and Southeastern, which taps the coal fields of southwestern Indiana that furnish a large part of the coal supply of the parent system and of many cities north and west of Chicago. The Outer Belt main-line trackage between Joliet and Normantown and its branch from Normantown into Aurora furnish a link in the strategic by-pass route over which large tonnages of coal move from south to west and northwest of the metropolitan area.¹

From Normantown, the Outer Belt's main line extends in a northerly direction, parallel to and five miles east of the Fox River, crossing all of the trunk lines that extend west from Chicago. That section of the Outer Belt is located sufficiently close to the Fox River to enable it to serve the valley cities by means of very short hauls over intersecting trunk lines between the cities and the intersections. The line is, however, sufficiently far east on the morainic upland to avoid the irregular configuration of the Fox River Valley and its tributary ravines.

In the northwest portion of the metropolitan area, the Outer Belt Line forms a wide arc, crossing all of the railways that enter Chicago from the northwest and north. It reaches the shore of Lake Michigan in the North Chicago-Waukegan industrial area, thirty-eight miles north of the commercial center of Chicago.²

Method of interchange on the Outer Belt Line.--Interchange

¹The Chicago, Milwaukee and Gary Railway between Rockford and Aurora and between Joliet and Delmar, Illinois, the junction with the Chicago, Terre Haute and Southeastern, was built in 1904 and 1905. The Terre Haute road was completed in 1906, when the operating rights over the Outer Belt were acquired. The Chicago, Milwaukee, St. Paul and Pacific acquired the Chicago, Milwaukee and Gary early in 1922 (The Milwaukee Road, 1847-1939 [Chicago: The Milwaukee Road, 1939], p. 12).

²Most of the Elgin, Joliet and Eastern Railway system was constructed in 1887, with the exception of the former Chicago, Lake Shore and Eastern between South Chicago and Gary, built 1895 to 1897, and the northeastern portion of the main line, completed in 1890. Many branches and feeder lines were subsequently constructed (Tan, op. cit.).

of cars between the Outer Belt Line and the trunk lines that it intersects is direct and expeditious. At each intersection an interchange track is provided, and at the more important crossings a small yard. Inbound and outbound freight trains on the trunk lines do not, commonly, originate or terminate at the Outer Belt crossings because the traffic interchanged at those crossings constitutes but a small portion of the total traffic of each trunk line train. In every case the Outer Belt Line intersects the main line railways beyond their principal Chicago district freight yards. The most common practice is for the road engine on the main line freight train to pick up or drop cars to and from the Outer Belt, without the aid of a switch engine. Usually such cars, being the first to be dropped in the terminal district or the last to be picked up, are set at the head-end of the train, thereby minimizing the delay when the engine is detached for switching operations. The Outer Belt Line, on the other hand, employs switch engines in its portion of the interchange. For such operations three sets of facilities are most commonly provided, namely (a) an interchange track or small yard on the trunk line railway, (b) a connecting or interchange track between the two railways, and (c) a small yard on the Outer Belt Line where the cars are set out awaiting pick-up by the trunk line train or the belt line train, as the case may be. The latter yards are, in general, somewhat larger than are the nearby interchange yards of the radiating trunk lines, because the operations of the Outer Belt Line require that cars be classified after receipt from the trunk lines for delivery to the proper destination. In the reverse direction, the trunk line that receives the cars from the Outer Belt Line for outward movement from Chicago, having previously made up its through train at its major yard closer to the center of Chicago, simply picks up the additional cars from the Outer Belt Line with the train's regular road engine, which then places the cars at the head-end of the train, for reclassification and replacing in the train at the next division point, which may be from one hundred to several hundred miles from Chicago. Thus the yards required for interchange between line-haul carriers and the Outer Belt Line are not large nor complex and do not require vast accessory facilities as do the major classification yards of the trunk lines.

In a sense, then, the Outer Belt Line is an intermediate

road-haul carrier around the edge of the terminal district, rather than primarily a terminal railway like the other belt lines.

CHAPTER III

FREIGHT YARDS, AND SWITCHING AND BELT LINES WITHIN THE CHICAGO TERMINAL DISTRICT

Within the Chicago Terminal District, the area enclosed by the shore of Lake Michigan on the one hand and the Outer Belt Line on the other, is a vast number of railway lines and facilities, including the trunk-line routes, a number of important circumferential or belt lines, switching and industrial railways, yards, terminals, and shops. Within the central part of the terminal district alone, the 400 square miles in the so-called Chicago Switching District, there are 5,710 miles of railway track, 160 freight yards, 75 freight stations, 6 major passenger terminals, and many auxiliary facilities. Approximately 5,000 industries are served by individual side-tracks.¹ Most of the facilities are located in definite relationship to each other. In this and succeeding chapters the outstanding characteristics of those relationships will be pointed out.

Major Classification Yards of the Trunk Lines

Each of the principal trunk line railways that radiates from Chicago operates one or more classification yards, in which freight cars are classified in accordance with their destinations and the trains in which they are to be placed for further movement. Classification yards may be regarded as the plants in which trains are assembled. They are the most extensive of all railway terminal facilities, and their locations vitally affect the development of the land use pattern of the entire metropolitan area, as well as the efficient functioning of its railways.

On almost all of the trunk line railways of the metropolitan area the outermost of the classification yards are the largest and most important. In those yards the road freight trains are

¹ Illinois Freight Association, Chicago Switching Committee, Tariff 22-DD, List of Industries with Private Switch Tracks in the Chicago Switching District (Chicago, 1943).

assembled and broken up.¹

Locational characteristics.--Practically all of the outer classification yards have certain locational characteristics in common. They are located well inside of the Outer Belt Line and either just outside or just within the next outermost belt railway, and beyond the peripheral belt of industry that semicircles the City of Chicago and its inner suburbs. The vast majority of the industrial and commercial establishments of the metropolitan area are closer to the center of Chicago than are the outer classification yards. The reason for the peripheral location of the yards is obvious if one considers that the object of all terminal switching movements is to handle inbound and outbound cars with a minimum of mileage and delay, and, wherever possible, without reverse movement, between road train and local destination, or between local point of origin and the road train in which the cars are to leave the terminal district.

Location of the major outer classification yards at or near the intersection of the outermost belt line (other than the Outer Belt Line railway) enables the belt lines to transfer cars to or from the trunk line road trains without back-haul. Cars set out from inbound road trains are picked up directly by the engines of the belt line over which they are routed, by switch or transfer engines and crews, for movement along the same trunk line farther toward the center of Chicago, or, in cases where reciprocal switching arrangements are in effect, by the engines and crews of another trunk line for direct interchange without intermediate movement over a belt or switching line.

Because the Outer Belt Line handles only a relatively small percentage of the total traffic of the terminal district, the maximum convenience of operation would not result from location of the major yards at the points where the Outer Belt Line intersects the trunk lines. Were the yards so located, large numbers of transfer trains would have to be operated over the trunk lines for longer distances to and from the more remote classification yards.

Level land is essential for the location of the large freight classification yards. For that reason among others, such

¹The term "road train" here refers to a train operated between a point within the terminal district and a distant point, as distinguished from a "transfer train," which operates from one point to another within the terminal district.

yards are all located on the flat Chicago plain. The largest and newest yards, Proviso, Bensenville, and Markham, are at the outer edge of the plain and extend a short distance into the Valparaiso moraine. In some instances the higher land of the moraine has reduced the amount of grading necessary to provide for sorting of cars by gravity, but that condition is relatively unimportant.

The outer classification yards are provided with a variety of facilities requiring, in some instances, many hundreds of acres. A large classification yard is in reality a group of several yards, each serving a specialized function in relation to the whole. A typical classification yards includes an inbound receiving yard, a hump or throat for inbound movement, an inbound classification yard, an inbound departure yard for the transfer trains, an outbound receiving yard, an outbound hump or throat, an outbound classification yard, an outbound departure yard, lead tracks, interchange tracks, repair or "bad order" tracks, caboose tracks, round-houses, coaling facilities, and several types of repair or maintenance shops.¹

Nature and operation.--In order to understand how a large classification yard functions, and consequently to understand the relationship between railway operation, space requirements, and the location of the facilities, we shall follow a typical operation of classifying an inbound road freight train in one of the larger yards. For the purpose, the Proviso Yard of the Chicago and North Western Railway has been selected, and we shall follow the classification of a hypothetical freight train entering the metropolitan area from the west.

Originally a smaller yard with a capacity of 2,000 cars,² Proviso Yard is now one of the world's largest, having been greatly extended and enlarged between 1927 and 1930 to many times the capacity of its original layout, constructed in 1903.³ The rebuilding and enlargement, completed at a cost of \$16,000,000,⁴ made

¹For descriptions of typical classification yards in all parts of the United States see: John A. Droege, Freight Terminals and Trains (2d ed.; New York: McGraw-Hill Book Co., 1925).

²Chicago and North Western Railway Company, Chicago Terminals (Chicago: Chicago and North Western Railway Co., 1909).

³"C. and N. W. Completes Large Freight Terminal," Railway Age, LXXXIX (August 2, 1930), 224.

⁴Chicago and North Western Railway Company, Proviso Yard

the yard a dominant feature of the landscape on the western fringe of Chicago and a vital part of the metropolitan railway pattern.¹

The yard is strategically located between two belt-line intersections five miles apart, along the Chicago and North Western's Galena Division. The westernmost of the intersections is where the Des Plaines Valley cutoff line of the Chicago and North Western, bringing traffic from that road's Wisconsin and Milwaukee division lines from the north and northwest, reaches the Galena Division (Figs. 2 and 3). The eastern intersection is where the joint line of the Indiana Harbor Belt and the Baltimore and Ohio Chicago Terminal railways, the outermost of the inner belt lines, intersects the Galena Division. Over the latter facility, Proviso Yard serves all of the lines that enter Chicago from all directions except north and northwest, which are reached over the Des Plaines Valley cutoff. Practically all of the road freight trains of the Chicago and North Western, not only of its Galena Division but of its Wisconsin and Milwaukee divisions as well, are assembled or broken up in Proviso Yard.²

Our hypothetical train, as it arrives, carries many types of freight from many parts of the west: potatoes from Idaho, oranges from southern California, cantaloupes from western Colorado, livestock from Nebraska, copper bars from Butte, and many other items. The train was assembled at Council Bluffs, Iowa, the

and Freight Transfer Station at Chicago, Ill. (Chicago, n.d.).

¹The author is indebted to Mr. A. R. Pelnar, General Superintendent of Freight Terminals, Chicago and North Western Railway, for permission to make a detailed inspection of Proviso Yard.

²Before Proviso Yard was put into operation the main receiving and classification yards of the C. and N. W. were located at Crawford Avenue (Pulaski Road), nine miles to the east. A small interchange yard, constructed in 1903 at Proviso, handled interchange traffic in connection with the Indiana Harbor Belt-Baltimore and Ohio Chicago Terminal belt railway, discussed elsewhere in this dissertation. It relieved some of the traffic that formerly passed through the Crawford Avenue facilities. The Des Plaines Valley cutoff gave access to Proviso Yard from the north and the northwest. It was opened in 1910. When the cutoff was completed all freight trains with traffic to or from connecting eastern railways were routed through Proviso. In spite of that, the increasing traffic of the Chicago and North Western continued to tax the Crawford Avenue Yard, and in 1921 a comprehensive study was inaugurated to recommend a plan for the railway's freight terminals. As a result, the reconstruction of Proviso Yard as the principal terminal, to replace the Crawford Avenue Yard, was undertaken (Railway Age, LXXXIX [August 2, 1930], 224-29).

western end of the Chicago and North Western Railway, from cars brought by the Union Pacific, the Burlington, and other railways serving the territory farther to the west. Additional cars were picked up in Iowa and western Illinois and added to the head-end of the train. The cars are bound for many destinations both within the Chicago terminal district and to the east, southeast, and south of it.

Upon arrival at Proviso, the train moves into the receiving or arrival yard, where the road engine and caboose are detached. A switch engine is coupled to the rear of the train and pushes it up the "hump." The hump at Proviso is very modern. It is equipped with car retarders, thereby eliminating the necessity for brakemen to ride on the cars as they descend the hump into the classification yard. As the switch engine pushes the cars over the hump, an operator at the summit flashes to each of the switch towers in the yard the number and destination of each car and the track to which it is to be switched. Here the cars are cut from the train, singly and in groups in accordance with their respective routings beyond Proviso. Each cut of cars is bound for a particular destination or connecting railway. The 59 parallel tracks of the Proviso east-bound classification yard fan out from the bottom of the hump. As each cut of cars descends the grade towermen set the switches that guide the cars into the appropriate tracks in the body of the yard. The first cars, for example, are potatoes for Wood Street; they go on track 17. The next cut is a single car for the Illinois Central to pick up for southward movement; it goes to track 31. The next two cars contain cantaloupes for the Erie to haul to the New York area; they go on another track. The procedure continues until the entire train is sorted. As the cars are cut from the train they descend the hump into the proper yard tracks by gravity, their rate of speed controlled by retarders on the tracks that increase the amount of friction on the wheels. The retarders are operated by skilled men in nearby towers, so that each car glides to a stop at the desired point in the yard. If other cars for the same destination or connecting line are already placed on the same yard track, the car descending the hump is retarded with just sufficient pressure to bring it to a stop where it couples gently on to the cars ahead without jarring them.

The result of the classification is that each of the yard

tracks contains a number of cars brought in by various trains, destined for the same point within the metropolitan area or for the same connecting railway system. All cars, for example, destined for the downtown team tracks are on one classification track, regardless of the train in which they originally entered the yard. Cars for the South Water Street produce terminal are on another track, those for movement east and south over railways that pick up cars in the Belt Railway Company's Clearing Yard are on another, and those for eastward movement on the New York Central, out of the Indiana Harbor Belt Line's Gibson or Blue Island yards are on still another track. Other cars, found to be in need of minor repairs, are routed to the "bad order" tracks, from where they are sent to the nearby shops before being allowed to proceed.¹

Although in most of the newer yards, including Proviso, cars are sorted by the use of gravity-operated humps either with retarders or brakemen who descend with the cars, a number of the classification yards of the metropolitan area are operated with flat switching, whereby switch engines move the cars in and out of the classification tracks. The latter type of yard is less efficient and uses more labor but serves in locations where space is not available for long tracks in the body of the yard, or for humps. Flat switching is also used where the volume of traffic is not sufficient to warrant the additional capital investment in a hump with its associated complex mechanical facilities.

From the classification yard's body tracks the newly-assembled trains, road trains if outward bound from Chicago and transfer trains if inbound, are moved to the departure yard, where they receive the engine and caboose, for further movement. At Proviso inbound trains for points on the Chicago and North Western in the Chicago area are hauled by that road's switch engines over several alternate routes through the city and suburbs, to a number of that railway's freight stations and team tracks, or to industrial sidings. In the case of some connecting railways, reciprocal switching arrangements are in effect. Cars for movement east over the Pennsylvania Railroad or south over the Illinois

¹For a detailed plan of the track layout at Proviso Yard see: Chicago Terminal Committee, Report on Railroad Terminal Co-ordination, Chicago, Illinois, and Vicinity (Chicago: Federal Coordinator of Transportation, Section of Regional Co-ordination, 1936), I, Exhibits 37 and 38.

Central, for example, are picked up in the eastbound departure yards at Proviso by the engines and transfer crews of those companies, because the Chicago and North Western has entered into reciprocal switching arrangements with them and is similarly permitted to send its own crews to the Illinois Central or Pennsylvania yards to pick up north- or westbound freight cars for transfer through Proviso. Cars for other trunk line railways, either for movement beyond the metropolitan area or to and from the stations and sidings of the other trunk lines within the Chicago terminal district must, if the lines are not intersected directly by the Chicago and North Western, move over the tracks of one or more of the belt lines.

An indication of the vast areas that are required for the major classification yards is afforded by the car capacities of the various sections of Proviso Yard. The inbound classification hump yard holds 3,274 cars, the hump repair yard 187 cars, the forwarding yard 1,724 cars, the outbound Wisconsin Division yard 1,889 cars, the outbound Galena Division yard 1,522 cars, and so forth. In all, Proviso Yard has a capacity for 26,000 cars on its tracks at one time. Obviously, large areas are required for such facilities. Proviso Yard embraces 1,500 acres and is five miles long and one-and-one-half miles wide at the widest point. Several other yards in metropolitan Chicago are nearly as large. Land for such facilities could not be found in or near the built-up parts of the metropolitan area at reasonable cost, and consequently, even aside from the requirements of railway operation, such yards must of necessity be located on the urban periphery.

As train lengths increase, classification yards must become longer, because the economical maximum length of a train is limited by the length of the longest tracks in the yards, unless expensive and time-consuming "push and pull" switching is used. Between 1921 and 1941 the length of the average freight train in the United States increased from fewer than 38 to more than 50 cars.¹ Because the figure includes local branch line and way trains, the average train entering and leaving metropolitan Chicago must be considerably longer than fifty cars. Trains of one hundred cars and more are very common. Since the major yards con-

¹Western Railways' Committee on Public Relations, Railroad Facts (1942 ed.; Chicago, 1942), p. 84.

tain duplicate facilities, one set for each direction of traffic movement, their width also must increase because the facilities are most commonly placed side by side. Furthermore, as schedules are speeded up and competition of other media of transportation becomes more intense, the number of intermediate yardings and classifications of freight cars between the point of shipment and the point of consignment decreases, and conversely, the amount of switching and sorting of cars, other things being equal, at the major terminals and gateways such as metropolitan Chicago, greatly increases.

Peripheral movement of the yards.--The outer classification yards of Chicago's major trunk line railways are, therefore, tremendous establishments, representing in most cases a series of expansions and enlargements. In many instances they are the culmination of a long series of removals farther and farther from the center of the city as space requirements outgrew the area of land available for expansion and as the land values in the vicinities of the older yards rose beyond the capacity of the railways to purchase land for expansion of the classification facilities.¹

Like the classification yards, large industrial plants have also moved to the periphery of the city, where larger sites are available at lower land cost. Such newer industrial plants have tended to locate on the belt lines. The consequent rise in relative traffic volume on these railway lines has also been a factor in the peripheral movement of the trunk lines' classification yards, in order to avoid back-hauls.

Chicago has a series of old freight yards along most of the trunk line railways, which have more or less outgrown their original functions as major primary classification yards and now serve only industries in their vicinities, or as interchange yards for the local transfer trains to and from the nearby belt lines. In such yards, major classification of road trains does not commonly take place, except in a few instances for the special "manifest" freight trains that operate to and from a limited number of destinations such as the Union Stock Yards, the Chicago Produce

¹Cf. Charles C. Colby, "Centrifugal and Centripetal Forces in Urban Geography," Annals of the Association of American Geographers, XXIII (1933), 1-20, and Homer Hoyt, "Forces of Urban Centralization and Decentralization," The American Journal of Sociology, XLVI (1941), 843-52.

Terminal, or similar specialized terminals. Such older yards are now used for storage of idle cars or for local interchange purposes. In some cases they have been completely abandoned. They are, in many cases, no longer suited to the handling of modern trains, and they represent maladjustments in land use that are a challenge to both the railways and to the city planners as well.

Several of the older yards of the Chicago and North Western Railway, each in its turn the major primary classification yard, are still in service, but not in their original capacities. Along Kinzie Street, just west of the downtown passenger terminal, is a series of local freight facilities on the site of what was an important yard.¹ Between Western and California avenues, two miles west of downtown Chicago, what was once a major freight classification yard now comprises a storage yard for idle cars, a local interchange yard, and a coach yard for passenger trains.² Between Pulaski Road and Kenton Avenue, two miles farther west, in addition to the huge main shops of the railway system, there is a 254-acre freight yard, the major classification yard before the enlargement of Proviso. The yard is now used only for

¹The Galena Division of the Chicago and North Western, on the line of which Proviso Yard is located, was the first railway line serving Chicago to be constructed. Construction was started in June, 1848, and the first train operated west to the Fox River later that year. In 1850 trains operated to Elgin, and the road was pushed westward, reaching Council Bluffs, Iowa, where it connected with the Union Pacific, in 1869. In the autumn of 1848 a one-story wooden building at Canal and Kinzie streets, just across the Chicago River from the business center, served as the first passenger depot of the line, which was originally called the Galena and Chicago Union. Freight and passenger yards were located near the original depot. In 1852, however, the North Branch of the river was bridged and new terminal facilities were constructed farther east. The original line was laid out due east and west along Kinzie Street.

For descriptions of the early terminal and yard sites see the Annual Reports of the Galena and Chicago Union Railroad Company for 1848 to 1855, and Yesterday and Today, A History of the Chicago and North Western Railway System (1910 ed.; Chicago, 1910), pp. 7-10.

²The yards serve industries in the vicinity and enable rapid transfer of cars to be made with other railways over the inner belt route. The yards are located at the northern end of that route. Nearby shops service passenger equipment used in long-distance trains on all divisions of the Chicago and North Western that enter Chicago as well as that used on suburban trains of the Galena Division.

classification of cars for industries in the immediate vicinity and for interchange with the nearby belt route.¹

The other western trunk line railways that serve metropolitan Chicago have similar outer classification yards and inner old yards that have had very similar histories. The Chicago and North Western's great competitor for the traffic of the territory north and west of Chicago, the Chicago, Milwaukee, St. Paul and Pacific Railway (the Milwaukee Road) has a series of freight yards which, in their functional relationships and historical development, closely parallel those of the former road. The principal classification yard of the Milwaukee Road is at Bensenville, a short distance to the north of Proviso (Figs. 2 and 3). The yard is similarly located in proximity to the intersection of the Indiana Harbor Belt--Baltimore and Ohio Chicago Terminal joint line and the main western line of the parent company. Like the Chicago and North Western, the Milwaukee Road yard serves not only the west main line, but also the lines of the system that enter Chicago from the north, because the latter system operates its north-south road freight trains over the Chicago and North Western's Des Plaines Valley cutoff, on which it has trackage rights between Bensenville and its main line to the north. The Bensenville Yard, like Proviso, is very large, extending for over three miles.² The principal classification yard has 47 body tracks, and the total track capacity of all portions of the yard is 8,731 cars. An average of about five thousand cars are classified daily.³ Bensenville is the make-up and break-up yard for nearly all of the Milwaukee Road's freight trains to and from both west and north. A

¹The northern end of the Belt Railway Company of Chicago's principal route is at the west extremity of the yard. The belt line north of that point is owned and operated by the Chicago and North Western, connecting with the Wisconsin Division at Mayfair, five miles to the north. Thus the yard is well located for interchange of freight over the belt lines, both to and from industries along the Belt, and also to and from other trunk line railways that the belt line intersects.

²Bensenville Yard is provided with a hump, but most of the switching is done without its aid. The Chicago and North Western's freight cutoff line from the north to Proviso crosses the middle of Bensenville Yard on a long viaduct. The Milwaukee Road trains that use that line from the north enter Bensenville Yard from the west end over a long semicircular connecting line.

³Information supplied by office of Superintendent, Chicago Terminal Division, The Milwaukee Road.

few of the fast freights originate and terminate at Galewood Yard, within the City of Chicago and nine miles closer to the central business district, where the Milwaukee Road operates its principal less-than-carload freight house. Prior to the opening of the large yard at Bensenville in 1918, Galewood Yard, constructed in 1903-05, was the system's principal Chicago classification yard, but the traffic outgrew the facilities, and surrounding residential development made the purchase of additional land impossible. Other secondary yards, even closer to the center of the city, each in turn once a major yard, serve local industries and interchange cars with the belt lines. Such yards are located at Western Avenue, and on Goose Island in the north branch of the Chicago River.

The Soo Line,¹ like its larger competitors, makes and breaks its road freight trains at the outermost of its several yards in the metropolitan area, at Schiller Park, northwest of Chicago and close to both Proviso and Bensenville.²

¹The Soo Line (Minneapolis, St. Paul and Sault Ste Marie Railway) is an American subsidiary of the Canadian Pacific system, by which the latter secures direct entry into Chicago from the northwest. The Soo Line is, however, of primary importance to Chicago in its transportation of the agricultural products of Wisconsin, Minnesota and North Dakota. The system was originally developed mainly to serve the lumber industry of the northern lakes region and was consolidated in 1887 as the Wisconsin Central (Wisconsin Central Company, First Annual Report [Milwaukee, 1889], p. 5).

In 1889 an arrangement was made with the Northern Pacific, which had recently completed its line from St. Paul to Puget Sound, whereby the Wisconsin Central became the southeastward extension of the Northern Pacific, enabling that road to connect with eastern lines at Chicago. The Wisconsin Central, after demonstrating its importance to the "transcontinental" system, was obtained by the Northern Pacific under long-term lease in 1890. Financial difficulties after the crash of 1893 forced termination of the lease (Wisconsin Central Company, Sixth and Seventh Annual Reports [1896], p. 3). The same strategy in obtaining eastern connections was later responsible for lease of the Wisconsin Central by the Canadian Pacific.

A detailed history of the Soo Line's predecessor railway is: Roy L. Martin, History of the Wisconsin Central (Boston: The Railway and Locomotive Historical Society, 1941).

²The original Chicago yard of the Wisconsin Central (Soo Line) was leased from the now defunct Chicago and Great Western on the site of the present B. and O. C. T. facilities along the Chicago River just south of downtown Chicago. The Wisconsin Central used the entrance route from the west, owned now by the B. and O. C. T., since 1889. The congested traffic in the central part of Chicago made a peripheral location for freight switching neces-

The terminal operations of the Chicago, Burlington and Quincy Railroad also illustrate the relationship between the primary classification yards and the secondary yards.¹ Although the Burlington operates a moderate-sized interchange yard at the intersection of the Outer Belt Line at Eola, thirty-five miles west of the Chicago terminal,² the great majority of its road freight trains are made and broken at the Morton Park-Clyde Yard in Cicero, just west of the Chicago city limits. The yard has a capacity of 6,500 cars. Unlike most major yards, it was established early in the history of the railroad.³ The Burlington also operates several secondary yards, of which those at Congress Park and at Western Avenue are most important. The former, an interchange yard

sary. The Schiller Park Yard was opened in 1898, on a site where abundant level land was available at low price. From that date, the yards became the origin and destination of allroad freight trains of the Wisconsin Central and later of the Soo Line. The railway employees that settled nearby formed the nucleus of the village of Schiller Park. The yards were greatly improved in 1929 (Martin, op. cit., pp. 86-87).

¹Information from records of the Burlington system, by courtesy of Mr. N. P. Willis, Assistant to General Superintendent of Transportation, and Mr. C. H. Brady, Assistant Superintendent of Mail, Baggage, and Express Traffic.

²At Eola, also, is a very large material yard and scrapping plant of the Burlington. The location was selected because the Outer Belt Line provides ready access to the large-scale users of heavy scrap in the Calumet district and elsewhere, because it is a short distance from the Burlington's principal shops in Aurora, and because land was available at considerably less cost than at locations closer to Chicago.

³The Burlington system is one of Chicago's principal western railway systems, with lines extending to Denver, to Kansas City, to Billings, Montana through Omaha, to Paducah, Kentucky, and to the Twin Cities. It began as the Aurora Branch Railroad, a short line between Aurora and Turner Junction, now West Chicago, on the Galena and Chicago Union, thirty miles west of Chicago. The line was opened in 1850. The system grew by accretion of other early lines, reaching the Mississippi at two points by 1856. Until 1864 the trains operated into Chicago from Turner Junction over the Galena and Chicago Union, using the terminal facilities of that road. In 1864 the Burlington opened its own line to Chicago via Naperville and Downer's Grove. A brief history of the lines is contained in: Richard C. Overton, Burlington West, A Colonization History of the Burlington Railroad (Cambridge: Harvard University Press, 1941). A history of the lines east of Burlington, Iowa, and Quincy, Illinois, together with the full texts of the legal documents affecting the routes and terminals is contained in: W. W. Baldwin (ed.), Chicago, Burlington and Quincy Railroad Company Documentary History, Vol. I, Lines East of the Mississippi River (Chicago, 1928).

at the intersection of the Indiana Harbor Belt Line west of the Morton Park Yard, is an exception to the rule that the major yards are the outer yards. It reflects the earlier establishment of the Morton Park Yard, which has long been the principal yard of the Burlington. The Western Avenue Yard, like the inner yards of most railways, is a local interchange facility that serves industries in its vicinity.

The Burlington's Morton Park-Clyde Yard, older and closer to the central part of Chicago than are the major classification yards of most railways, has partially been relieved of its original function, because it is relatively small and is surrounded by intensively developed industrial areas that have prevented the acquisition of land for expansion. Rather than establish another and larger yard farther toward the periphery of metropolitan Chicago, the Burlington decided to remove the major classification almost entirely from the metropolitan area and to perform it at the next division points to the west. Those points are Savanna, Illinois, for trains on the Twin Cities line, and Galesburg for trains on the main Omaha-Denver line. Many of the former trains are also classified at Galesburg, reaching that point over a connecting branch. At Galesburg, 162 miles southwest of Chicago, a yard was opened to classify trains in "station order" for all stations and interchange points between there and Chicago, in order to avoid re-classification in the metropolitan area and to avoid enlargement of the Morton Park-Clyde Yard.¹ Thus, an inbound train drops cars at Eola for the Outer Belt, at Congress Park for the Indiana Harbor Belt and Baltimore and Ohio Chicago Terminal lines, at Morton Park-Clyde Yard for points in that vicinity, and at Western Avenue for the Belt Railway of Chicago, for eastern railways, and for industries in the vicinity. Each point has its cars dropped successively from the head end of the train, since the cars are placed in the train in that order at

¹The large classification yard at Galesburg includes a modern hump yard that can classify nearly two hundred cars per hour. It was opened for traffic on September 3, 1931, and greatly relieves the congestion in the Morton Park-Clyde Yard. Trains leaving the latter westbound are not classified in "station order" until reaching Galesburg, and eastbound trains are classified at Galesburg in accordance with the local routes of cars within the Chicago metropolitan area. The Galesburg facilities are strategically located with relation to the Burlington system, because lines radiate from there in seven directions.

Galesburg.

The Rock Island railway offers another illustration of the relationship between primary and secondary freight yards. On that railway all road freight trains originate or terminate at Burr Oak Yard in Blue Island, just outside the southwestern corner of the City of Chicago.¹ Burr Oak is the outer metropolitan yard of the Rock Island. It is located just within the inter-section of the Rock Island and the metropolitan area's three principal belt lines, the Indiana Harbor Belt, the Baltimore and Ohio Chicago Terminal Railroad, and the Belt Railway of Chicago, which pass through Blue Island. No road freight trains normally operate on the Rock Island north of Burr Oak Yard. Transfer movements connect that yard with the secondary yards closer to the center of Chicago: with Gresham Yard, where cars are transferred over the Rock Island's South Chicago branch, with Englewood Yard, where they are interchanged with the New York Central and the Pennsylvania, and with the Taylor Street freight station in downtown Chicago.

The Illinois Central, like the Chicago and North Western and the Milwaukee Road, has moved its major classification yard outward several times. The tracks at the foot of Congress Street on the lake front in downtown Chicago, once the classification yard for cars loaded and unloaded at the South Water Street terminals near the mouth of the Chicago River and for those interchanged over the St. Charles Air Line at Sixteenth Street,² is no

¹For a very detailed description of the terminal facilities of the Rock Island in and near Chicago, and of their operation, including Burr Oak Yard, see: Pei-lin Tan, "Terminal Operations of the Chicago, Rock Island and Pacific Railway Company" (Unpublished Master's thesis, School of Business, The University of Chicago, 1929).

²The St. Charles Air Line Railroad is a very important element of the railway pattern in the central part of Chicago. It is a short elevated line, eight-tenths of a mile in length, extending from the south end of the Illinois Central's lakefront passenger terminal at Sixteenth Street, westward to the Chicago River. It crosses the river on a large bascule bridge. Just east of the bridge it connects with the tracks of the Illinois Central's western line to Omaha and Sioux City, thereby providing a route for the trains of that line to and from the Illinois Central's main north-south line, as well as to and from the lakefront passenger and freight terminal facilities. On the west side of its Chicago River bridge it connects with the east-west main line of the Burlington and with a freight line of the Chicago and North Western paralleling Sixteenth Street, both of which are de-

longer a major yard, much to the benefit of the city which is relieved of a nuisance at its front door. Fordham Yard, on the Illinois Central at Eighty-seventh Street, was once the busiest on the system but is now practically unused and has, in fact, been cut in two by a street extension. Similarly, Wildwood Yard, a few miles farther south, once a busy yard, is now a storage place for idle cars and a minor interchange yard for local transfer movements. All of those facilities have been, since 1926, replaced as major yards by Markham, more than twenty miles south of the Chicago terminal. Markham Yard, like Proviso, was constructed in response to the need for a peripheral location for freight classification on land having low value and away from residential and other incompatible land uses. It is located on the edge of the Chicago plain and is approached from the south down a long easy grade from the summit of the Valparaiso moraine. The yard is almost four miles long, extending between Harvey, a major industrial satellite city, and Homewood. It contains 114 miles of track with a capacity of 9,000 cars. Provision has been made for expansion to accommodate 13,000 cars. Like most of the principal classification yards, Markham consists of two separate systems of yards side-by-side, one set for the traffic in each direction. Each of the two consists of a receiving yard, a hump classification yard equipped with car retarders, and a departure yard. At Markham, also, are the roundhouses, coaling facilities, and repair equipment for all of the road freight engines operating to the south, and for the switch engines that haul the transfer trains between

scribed later in this dissertation. Thus the St. Charles Air Line provides a route for through movement between several western lines on the one hand and several southern and eastern lines on the other, close to downtown Chicago and between the two Chicago divisions of the Illinois Central. Although the latter road operates and maintains the St. Charles Air Line, the line is owned jointly by the Illinois Central, the Burlington, the Michigan Central, and the Chicago and North Western railways (Baldwin, op. cit., I, 259).

The line was the first connection between eastern and western railways to be opened through the City of Chicago. It was designed as a connection between the Galena and Chicago Union (C. and N. W.) on the one hand and the Michigan Central-Illinois Central lakefront line on the other, as well as a connection between both of these lines and the Rock Island-Michigan Southern line which it intersects. All four of the latter roads first secured entrance to Chicago in 1852, being the earliest, after the Galena Road, to do so. The location of the St. Charles Air Line was fixed in 1855 and the road was opened in 1857.

Markham and points closer to the center of Chicago. No Illinois Central main line road freight train normally operates north of Markham Yard. All transfer trains and switching movements are handled normally by Diesel-electric transfer locomotives, which haul the cars between the Chicago freight stations and the yards, interchange tracks, team tracks and industrial sidings of the metropolitan area on the one hand, and Markham Yard on the other.¹ All road trains of the Illinois Central's north-south main line are assembled and broken at Markham.² Although the prohibition by the City of Chicago of steam locomotive operation on the Illinois Central's lake front route was undoubtedly a factor in the removal of the primary classification operations to a point outside of the city, the move was necessary also as the result of the increasing need for a more efficient and larger yard layout on less valuable land, beyond the belt line intersections.

The eastern railways, too, have developed peripheral yards for the assembling and breaking up of the road freight trains. Although a number of daily trains operate in and out of the New York Central's Englewood Yard at Sixty-third and State streets in the City of Chicago, a much larger number of that system's trains, including those of the Michigan Central as well as of the New York Central proper, originate and terminate at the East Blue Island and Gibson yards of the Indiana Harbor Belt Line, which the New

¹The Lake Front ordinance of 1919 provided that after February 20, 1935 all freight on the Illinois Central's main line within the City of Chicago would be handled by other than steam power (Journal of the Proceedings of the City Council, City of Chicago, July 21, 1919, pp. 968-1000).

It was later shown that electrification would not be economically feasible. The courts declared that Diesel-electric power could be used under the terms of the ordinance, the object of which was to make possible a park development along the lake front east of the railway right-of-way and north of Fifty-first Street. Many trains, however, continued to be operated by steam between Markham Yard and the downtown freight terminals. In 1940 the railway finally substituted Diesel-electric power on all of those trains.

²An exception occurs in the case of a very few fast overnight merchandise trains to and from distant points, which proceed directly from and to the South Water Street freight terminals without intermediate switching of cars. Such trains, however, are hauled by Diesel-electric locomotives north of Homewood. For details of the operation of the Illinois Central in the Chicago terminal area see: Organization and Traffic of the Illinois Central System ([Chicago, 1938], pp. 16-72).

York Central partly controls.¹ Both of those yards are outside of Chicago and convenient to the industrial establishments of the Calumet district and Blue Island. The Baltimore and Ohio freight trains, likewise, originate and terminate at Barr Yard of the Baltimore and Ohio Chicago Terminal Railroad, a Baltimore and Ohio subsidiary. Barr Yard is located a few hundred yard north of the Indiana Harbor Belt's large East Blue Island Yard. It is also outside of the City of Chicago, while an extensive yard of the Baltimore and Ohio in South Chicago near the Carnegie-Illinois steel plant has been almost completely idle for many years.²

The Pennsylvania Railroad, perhaps the exception that proves the rule, originates and terminates its road freight trains far inside of Chicago at two old yards, one on each of its two entrance routes to the city: at Fifty-fifth Street on the Pittsburgh, Fort Wayne and Chicago line, and at Fifty-ninth Street near Western Avenue on the "Panhandle" (P. C. C. and St. L.) line.³

¹Data from personal interview with Mr. G. P. Gerrity, General Yardmaster, Englewood Yard, New York Central System.

²The original entrance of the Baltimore and Ohio into Chicago was over its present passenger route along the lake to just northwest of the Calumet River bridge. Here, instead of turning westward along the Rock Island's South Chicago branch parallel to Ninety-fifth Street as at present, the Baltimore and Ohio trains, passenger and freight, continued directly northwestward, joining the Illinois Central's main line at Seventy-first Street. The Illinois Central's line and downtown terminals were used. In South Chicago, the Baltimore and Ohio established freight yards and shops. Following the acquisition by the railway of the extensive terminal properties of the old Chicago and Northern Pacific, including the Grand Central Station, the old route was abandoned for through service in 1891. Freight trains were then routed over other lines of the present Baltimore and Ohio Chicago Terminal Railroad, including the line to Barr Yard. Elevation of the Illinois Central in 1892 caused a severing of the physical connection with the Baltimore and Ohio at Seventy-first Street. The old line of the latter, a part of its main line from 1874 to 1891, is now a very minor switching spur with a dead-end at the northwest. The old yard, shops and roundhouses at South Chicago have largely been abandoned.

³The "Panhandle Route" (Pittsburgh, Cincinnati, Chicago and St. Louis Railway) is an important subsidiary of the Pennsylvania Railroad, connecting Chicago with Indianapolis, Cincinnati, Louisville, and Pittsburgh, the latter being reached via Columbus. Its line into Chicago was completed in 1866. Prior to that time the "Panhandle" trains reached Chicago over the Pittsburgh, Fort Wayne and Chicago from Valparaiso, Indiana. Originally called the Chicago and Great Eastern Railroad, the "Panhandle" was leased by the Pennsylvania in 1869 to serve as a western feeder to that system (Schotter, *op. cit.*, p. 80).

Both of those yards are well within the built-up portion of the city and far inside of all of the major belt lines. The Pennsylvania's two principal yards are interconnected by subsidiary lines, including the South Chicago and Southern¹ and the Calumet Western in the Calumet district, and more directly by the Englewood Connecting Railway, a two-mile east-west line parallel to Fifty-eighth Street between the two yards. The two main lines enable trains to be assembled and broken up at either yard regardless of the route that they use in entering or leaving the metropolitan area. In general, however, the Fifty-ninth Street Yard handles most of the business of the "Panhandle" line, and the Fifty-fifth Street Yard most of the traffic in livestock, packing house products, and other traffic of the Union Stock Yards and the Central Manufacturing District that moves over the Pennsylvania system. Capacity of the former yard is 3,870 cars, and of the latter, 2,522 cars. As the result of the built-up conditions in the areas bordering both yards, neither can be expanded and the traffic must be divided between the two. The Pennsylvania's outer classification yard, Colhour, on the shore of Lake Michigan just east of the Indiana-Illinois state line and the Chicago city limit, handles, in addition to traffic to and from the industries of the Calumet district, interchange freight in connection with the various belt and switching lines. The three-fold division of the primary freight classification activity of the Pennsylvania Railroad is unique in the Chicago metropolitan area.

Several railways that enter metropolitan Chicago but do not operate their own trackage in the central portion of the city have located their principal classification yards at or near the inner extremities of their rights-of-way, near the junction of the railway whose tracks they use to reach central Chicago. Several such railways, which reached Chicago about 1880, after most of the entrance routes had been developed and when high land values and intensive use of the land in Chicago prevented acquisition of new radial rights-of-way, utilize the tracks of the

¹The South Chicago and Southern connection between the Pittsburgh, Cincinnati, Chicago and St. Louis line at Bernice, Illinois, and the Pittsburgh, Fort Wayne and Chicago line near Lake Michigan, a distance of ten miles, enables passenger trains to and from the former line to pass into Chicago and enter the Union Station over the tracks of the latter, avoiding the more circuitous "Panhandle" route through Chicago's west side.

Chicago and Western Indiana Railway, a terminal company, for their approaches to the central part of Chicago. For the most part, the freight trains that operate on the Chicago and Western Indiana trackage are transfer and local trains to and from the yards of the tenant trunk lines located just beyond the extremities of the Chicago and Western Indiana Railway. The latter extends from Dearborn Station¹ in downtown Chicago to Dolton, south of the city limits, and to Hammond, Indiana. Its two lines, located west and east of Lake Calumet, respectively, join at the Eighty-third Street Yard of the Chicago and Western Indiana.² Beyond the Dolton terminus of that line is the Haney Yard of the Chicago and Eastern Illinois Railroad, the principal classification yard of that railroad system in the Chicago district. In Hammond, similarly, are the major yards of the Erie and the Monon. The Wabash railway line that enters Chicago from the southwest has its main Chicago yard in the vicinity of Seventy-ninth Street and Kedzie Avenue, in a sparsely developed area just within the southwestern municipal boundary of Chicago.³ From that point, Landers Yard, the Wabash through passenger trains and also the local and transfer freight trains reach the line of the Chicago and Western Indiana

¹The Chicago and Western Indiana Railway owns and operates Dearborn Station, which is the passenger terminal of the Santa Fe, Wabash, Grand Trunk Western, Chicago and Eastern Illinois, Erie and Monon railways. The station was completed in 1885. For a detailed history of the depot see C. C. Hugel ("Historical Sketch of Dearborn Station," Railway and Locomotive Historical Society Bulletin No. 47 [Boston, 1938], pp. 95-98).

²The Chicago and Western Indiana was chartered in 1879 as part of a comprehensive scheme for furnishing terminal routes and facilities to a number of railways then pushing toward Chicago, that could not obtain their own rights-of-way into the city. The history of this company and its subsidiary, the Belt Railway of Chicago, is given in considerable detail in John E. Murphy (The Railroads of Chicago [Chicago: Privately printed, 1911]) and in Tan (The Belt and Switching Railroads of Chicago Terminal Area).

³The Wabash Railway line extends to Bement, Illinois, just east of Decatur, where it joins the lines of that system reaching St. Louis and Kansas City. The route into Chicago from Bement was completed in 1879. It crosses a very rugged and dissected portion of the Valparaiso moraine which is in large part devoted to forest preserves. The narrow and irregular ravines and valleys of a number of small creeks furnish reasonably level gradients for a portion of the line, but, in general, the Wabash, in order to cross the moraine, has more cuts and fills and greater curvature than the other trunk line railways.

over east-west trackage paralleling the Belt Railway of Chicago on the line of Seventy-fifth Street. All of those major yards, although located at or near the inner ends of the rights-of-way of their trunk line owners, correspond, in their peripheral location and relation to the general railway and urban pattern, to the major outer classification yards of the trunk line railways that reach central Chicago over their own rails.

Belt Lines Within the Terminal District

The Chicago terminal district is noteworthy for the magnitude and complexity of its belt line railways. By the use of the belt lines, shipments may be routed to, from, or between any of the trunk line railways that serve the metropolitan area whether or not the trunk lines directly intersect one another. Likewise shipments that originate or terminate on the industrial sidings or at freight stations of any trunk line may be routed in or out of the metropolitan area over any other trunk line.

The belt railway lines of metropolitan Chicago are, for the most part, owned and operated by specialized organizations, the belt railway companies, which, in turn, are controlled by the trunk line railways. Several trunk lines, too, operate circumferential lines without separate incorporation.¹

There are, in the metropolitan area, in addition to the Outer Belt Line already described, three important circumferential routes, so located as to form a generally concentric pattern. Each of the three routes is controlled and operated by not a single company, but rather is composed of sections of railway under various ownerships and operations.

Relation to traffic flow and location of industries.--The circumferential railway routes are important factors in the localization of industrial establishments within the metropolitan area. The peripheral trend in industrial location has been greatly facilitated and encouraged by the operation of the circumferential rail lines, which offer to shippers the advantages of locations beyond the congested central portion of Chicago, yet within easy

¹The term "belt line" as used in this dissertation refers to any circumferential line, regardless of the nature of its corporate organization. It thus includes circumferential lines operated directly as integral parts of trunk line systems.

access of all of the trunk line railways in every direction. The delays that are almost inevitable in the congested yards and terminals near the center of the metropolitan area, regardless of the efficiency with which shipments are handled through them, are largely avoided by shipments to and from the peripheral locations. An indication of the effect of the belt lines upon the localization of industry is afforded by the fact that, of the 5,735 industries with private switch tracks in the Chicago Switching District alone, 1,389, or 24.2 per cent, are located on the lines of the belt railway companies.¹ Hundreds of additional industries are located along the circumferential lines of the trunk railway systems. From all circumferential locations cars are switched to and from the major classification yards directly in transfer trains without the intermediate yardings that are required of cars from central locations on the trunk lines. Reduction of trucking movements on congested streets, particularly for less-than-carload merchandise results in additional savings in time. Considerably more than half of the shipments to and from the terminal district originate and terminate on the line of a different company from that over the lines of which they enter the metropolitan area, or leave it. Besides such local interchange practically all of the through traffic that passes through but does not originate or terminate in the metropolitan area is interchanged between the inbound and the outbound carriers. Were there no circumferential routes, the only way such interchange movements could take place would be over very indirect routes passing through the central part of the metropolitan area where the trunk lines converge. Intersections of the trunk line routes in other parts of the metropolitan area are few. Were the traffic all to converge in a limited area, the congestion would be inconceivable. It was therefore natural that connecting railways and some of the belt and switching lines were constructed very early in the railway history of Chicago.²

¹Tabulated from Illinois Freight Association, Chicago Switching Committee (Tariff 22-BB, Directory of Industries with Private or Individual Side Tracks in the Chicago District [Chicago, June 1, 1939]).

²The first connections between railways in the metropolitan area consisted simply of the convergence of lines at the points from which joint trackage was operated into the downtown Chicago terminals. Thus the Illinois Central and the Michigan

Within the area enclosed by the Outer Belt Line of the Elgin, Joliet and Eastern Railway, there is a number of generally concentric circumferential railway lines, each handling the transfer movements of one or more railways, and consisting in some cases of the trackage of one company, and in other cases of the lines of several companies on either jointly operated or closely parallel tracks. The circumferential routes may be grouped, roughly, into three principal lines, although in no case is a circumferential line under the control of a single railway company throughout its entire length. The three lines, for convenience in discussion, may be considered as the peripheral, the intermediate, and the inner belt line routes.

The peripheral belt route.--The peripheral belt line, approximately fifty miles in length and located at an average distance from the Chicago central business district of about fifteen miles, carries the heaviest volume of freight traffic of the three routes.¹ The line, as has been pointed out, connects the primary classification yards of the principal trunk line railways and enables interchange of cars to be made with a minimum of delay. In general the line is located at the outer edge of the built-up portion of the metropolitan area, from one to five miles beyond

Central could exchange traffic at Calumet (now Kensington), and the Michigan Southern and Northern Indiana (now the New York Central) could exchange cars with the Chicago and Rock Island at Junction Grove (Englewood) as soon as those lines were opened in 1852. The opening of the St. Charles Air Line in 1857 gave the original Galena and Chicago Union, its tenant the Chicago, Burlington and Quincy, and other western railways direct physical connection with the aforementioned eastern railways. In 1865 the Union Stock Yards and Transit Company line, paralleling the then southern city boundary at Thirty-ninth Street, in addition to serving the stock yards, linked the eastern railways with the western lines. In a sense this route, now called the Chicago Junction Railway, may be considered as the first belt line in metropolitan Chicago.

¹Although traffic volumes are not generally available for individual stretches of trackage, annual statistics of the belt line companies and special studies made at irregular intervals reveal much concerning the relative amount of traffic. Comparative data for the circumferential lines may be found in: Committee on Co-ordination of Chicago Terminals, op. cit., Chicago Terminal Committee, Report on Railroad Terminal Co-ordination, Chicago, Illinois, and Vicinity, and Interstate Commerce Commission, Comparative Statement of Railway Operating Statistics (Washington: Government Printing Office, annual). The latter gives traffic data by operating company rather than by individual routes, and groups all of the lines of each company.

the limits of the City of Chicago. For most of its extent it is in the open country thereby enabling transfer trains to be operated for relatively long distances without the interference and delays of numerous intermediate switchings at local sidings and minor yards. Transfer trains are operated on regular schedules to connect at the classification yards with the scheduled "manifest" or fast freight trains of the trunk lines. In addition, local way freight trains pick up and drop cars that originate and terminate at the industrial plants located on the belt line. The line is double-tracked throughout its entire length, and its location outside of the built-up urban area has permitted it to be laid out in diagonal directions without regard to conformance to the rectangular street grid pattern of Chicago and its suburbs. In that it contrasts notably with the belt lines that are closer to the center of Chicago.

The northwestern sector of the peripheral belt route differs somewhat from the other sectors in the character of its operations and traffic. That sector is operated by the Chicago and North Western Railway, primarily as a route for through freight moving between the Proviso Yard and the north and northwest. It serves a similar function for the Milwaukee Road, which has trackage rights into Bensenville Yard. The line, north and northeast of Proviso, is known as the Des Plaines Valley cutoff. A long viaduct carries the Chicago and North Western freight trains across the Milwaukee Road's Bensenville Yard. The southerly end of the line, in Proviso Yard, connects with the Chicago and North Western's Galena Division. By the use of the Des Plaines Valley Cutoff, both the North Western and the Milwaukee Road are enabled to consolidate their major freight classification at their respective large yards west of Chicago, even though a considerable percentage of the road freight trains move to and from the north.

For the greater part of its length, the peripheral belt route is a busy double-track line operated jointly by the Indiana Harbor Belt Railroad¹ and the Baltimore and Ohio Chicago Terminal

¹The Indiana Harbor Belt Railroad Company is owned equally by the New York Central, Michigan Central, Chicago and North Western, and Milwaukee roads. As the result of its control of the Michigan Central, the New York Central has a half ownership of the Indiana Harbor Belt. The latter operates on 628 miles of track, of which it owns 289 miles (Interstate Commerce Commission, Statistics of Railways in the United States, 1937 [Washington: Govern-

Railroad,¹ two of the principal belt, switching, and intermediate transfer carriers of the Chicago area. From Franklin Park, at the east end of the Bensenville Yard, the line swings in a wide arc around the western, southwestern, and southern edge of the City of Chicago. In the Calumet district it becomes an intricate network of lines, spurs, and yards serving the heavy industries of that part of the metropolitan area and interchanging traffic with the eastern railways.

Along the line of the peripheral belt railway are many specialized facilities for the handling of the various types of interchange and local traffic. At the north end of the line, between Bensenville and Proviso yards, is the Norpaul Yard, where the transfer trains of the belt line companies that operate over the route are made and broken up, the cars moving to and from the Chicago and North Western, the Milwaukee Road, and the Soo Line at their respective yards. From that point the peripheral belt

ment Printing Office, 1938)).

On the lines of the Indiana Harbor Belt are more than five hundred industries. Most of the trackage was constructed between 1897 and 1900. Of the joint line shared by the Baltimore and Ohio Chicago Terminal Railroad between Franklin Park and Blue Island, the portion between Franklin Park and McCook was constructed by the Indiana Harbor Belt's predecessor company, the Chicago, Hammond and Western, in 1897. The Chicago Terminal Transfer Company, a predecessor of the B. and O. C. T., already owned a track from Blue Island to McCook, where it served limestone quarries. The two companies made an agreement, still in force, whereby both roads operated the new belt line jointly, as well as the extension opened in 1897 giving a through line from Blue Island to Franklin Park (Tan, op. cit., pp. 85-91).

¹The Baltimore and Ohio Chicago Terminal Railroad Company, a wholly-owned subsidiary of the Baltimore and Ohio Railroad, operates on 372 miles of track, of which it owns 286 miles (Interstate Commerce Commission, op. cit., p. 252).

An eastward extension of the joint Indiana Harbor Belt-Baltimore and Ohio Chicago Terminal line between Franklin Park and Blue Island, was constructed to Mayfair in 1901, with the evident intention of reaching the shore of Lake Michigan north of the central business district of Chicago, where industries were expected to develop. When it became evident that the lake shore on Chicago's north side was not to become industrial, and when the Chicago and North Western moved its major freight traffic to its own Des Plaines Valley cutoff line, the Franklin Park-Mayfair connecting route was removed (Tan, op. cit., pp. 85-91).

In addition to a portion of the peripheral belt route, the Baltimore and Ohio Chicago Terminal Railroad Company owns several other lines, among them a nine-mile route from Forest Park into Chicago by which the Soo Line and the Chicago Great Western enter the city.

line extends southward through the suburbs of Bellwood and La Grange, where many large industries are located, crossing the routes of several of the western trunk lines. Small interchange yards are located at each of the intersections and the traffic is handled in a manner much like that described for the Outer Belt Line. The line passes close to the west end of the huge Clearing Yard of the Belt Railway of Chicago, enabling rapid interchange of cars to be made with the many railways using that facility. Numerous regularly-scheduled freight trains of both the Indiana Harbor Belt and the Baltimore and Ohio Chicago Terminal, operating over the joint peripheral belt line originate and terminate at Clearing in close connection with train movements of other railways to and from that yard. Continuing to the southeast, the line crosses several trunk railways at Blue Island and there becomes two separate lines. The first, the line of the Baltimore and Ohio Chicago Terminal Railroad, leads to Barr Yard, where the Baltimore and Ohio road freight trains to and from the east are assembled and broken up. The second, the line of the Indiana Harbor Belt Railroad, leads to the busy East Blue Island Yard, where the principal freight trains of the New York Central System are originated and terminated. From those yards eastward, other lines of both belt railway companies serve the Calumet district.

The peripheral location of the belt line of the Indiana Harbor Belt and the Baltimore and Ohio Chicago Terminal, together with the control of both companies by important trunk line railways, the former by the New York Central, the Chicago and North Western, and the Milwaukee Road, and the latter by the Baltimore and Ohio,¹ has encouraged the development of fast transfer service on schedules closely co-ordinated with those of the road freight trains on the various owner trunk lines. Other trunk lines also feed traffic to the joint belt line at their classification yards and at intersections. The connection with Clearing Yard is particularly significant, as is the connection between the Indiana Harbor Belt at Forty-ninth Street in Chicago with the Chicago River and

¹For interesting discussions concerning the facilities and operations of the Baltimore and Ohio, the Alton, and the Baltimore and Ohio Chicago Terminal railroads in the Chicago area, and for permission to make detailed inspection of the properties, the author is indebted to Mr. L. G. Curtis, Chief Engineer, and Mr. H. O. Wertenberger, Inspector of Accounts, of the Baltimore and Ohio Chicago Terminal Railroad Company.

Indiana and the Chicago Junction railways, serving the Central Manufacturing District and the Union Stock Yards. The large industries of Clearing, Central Manufacturing, and Stock Yards districts thus have expeditious service in connection with all Chicago trunk lines.

Of great significance is the fact that the circumferential route of the Chicago and North Western, Indiana Harbor Belt and Baltimore and Ohio Chicago Terminal railroads marks, in general, the outer limit of the Chicago Switching District, officially recognized by the railways since 1910. All railways within the limits of the Chicago Switching District, an area of approximately four hundred square miles, are governed by a set of tariffs that provide for certain uniform practices and rates.¹ It is immaterial, in so far as freight and switching rates are concerned, on what railway within the district an industry is located. Uniform rates are prescribed for switching and transfer movements from one rail line to another. All shipments to or from the district take the Chicago rates, regardless of where within the district a shipment originates or terminates, providing it moves a specified minimum distance outside the district on a trunk line, in which case the road-haul carriers absorb the switching charges on competitive traffic.

Most shipments originating on belt lines within the Chicago Switching District cost the shipper no more than if they originate directly on the line of the road-haul carrier by which they leave the district, since the latter railway in most cases absorbs the switching charges made by the belt lines. Industries are thus free from the former disadvantage of having to pay additional freight charges on all traffic except that handled directly by the line-haul carrier. Belt line locations, therefore, cost the shipper no more than trunk line locations, at the same time giving access to not one, but to all, of the trunk lines that enter the Chicago Switching District. A location on a trunk line route, on the other hand, compels the shipper to route all of his traffic over the trunk line on which he is located, or of paying additional switching charges that are assessed on traffic moving to or from a competitive railway. That condition has attracted many indus-

¹Boundaries of the switching district are defined in: Illinois Freight Association, Chicago Switching Committee, Tariff No. 20-V.

ries to the belt lines. Furthermore, less-than-carload shipments passing through the freight terminals of the belt lines, most of which are located near established industrial districts such as the Clearing or Central Manufacturing districts, can be routed over any trunk line at the same cost to the shipper.

The middle belt route.--Only half as distant from the center of Chicago as is the peripheral belt route, the intermediate or middle belt route passes through an intensively developed industrial zone within the city. It handles a considerable volume of local traffic as well as through traffic interchanged between trunk lines. Just as the peripheral route is operated by a number of companies but principally by the Indiana Harbor Belt and the Baltimore and Ohio Chicago Terminal, so the intermediate belt line is operated by several companies, although for the greater part of its length it serves as the route of one important railway, the Belt Railway of Chicago.

The northern portion of the route, as in the case of the peripheral belt line, is operated by the Chicago and North Western. It, too, connects the Milwaukee and Wisconsin divisions of that road with the Galena Division. It passes through Mayfair, nine miles northwest of downtown Chicago on the Wisconsin Division, and reaches the Crawford Avenue Yard, an extensive freight switching and classification facility on the Galena Division, the western main line of the Chicago and North Western Railway.¹

The Belt Railway of Chicago, principal operator of the middle belt route except for the Chicago and North Western's portion north of the Crawford Avenue Yard, is a terminal and transfer company jointly owned by thirteen of the principal trunk line systems that serve Chicago.² The company, affiliated with the Chi-

¹The line between Mayfair and the Crawford Avenue Yard formerly carried the freight traffic of the Milwaukee and Wisconsin divisions of the Chicago and North Western when the principal yard of that system was at Crawford Avenue, before the construction of the Des Plaines Valley cutoff and before the enlargement of Proviso Yard.

²The Belt Railway Company of Chicago was organized in 1882 to take over several lines already built by the Chicago and Western Indiana, and to link them together into a belt line, as well as to continue the line northeastward to Lake Michigan at Belmont Avenue. The latter extension was never built. The intermediate or middle belt line, paralleling and two blocks east of Cicero Avenue, was constructed by the Chicago and Western Indiana in 1881.

cago and Western Indiana, another local property, serves its owner systems as a transfer route among them, as a source of traffic for them to and from the hundreds of industries that the Belt Railway system serves, and as a means of efficient and rapid classification of cars interchanged among the trunk lines.¹

Classification of cars by the Belt Railway Company is performed principally at Clearing Yard. That yard, one of the principal freight handling facilities of the metropolitan area, was so named because it was designed to perform for the railways that share in its ownership much the same function that a clearing house performs for banks: it receives cars from the various railways, classifies them, and assembles them into transfer trains for the railways that are to carry them farther toward their destinations.² Within the yard are 180 miles of track, with a capacity

¹Information on the operations of the Belt Railway of Chicago and of the Chicago and Western Indiana was supplied by the office of F. J. Wasson, General Industrial and Traffic Manager of the two railways.

For a general description of the Belt Railway of Chicago, see: The Santa Fe Magazine, XXXII (January, 1938), 13-16.

²Clearing Yard had its origin in 1890 when Mr. A. B. Stickney conceived the idea of a great freight yard that would handle all of the interchange among the various railways that serve Chicago. A large tract of land extending from Fifty-fifth Street to Seventy-ninth Street and including the site of the present yard was purchased.

The original plan, never carried out, provided for a double-track circle one mile in diameter, outside of which individual yards for each of the participating railways were to be located. Interchange of cars was to be carried out simply by movement around the circle from one yard to another (Engineering News, XLVII [1902], 12-14).

The circular plan was abandoned soon after the land was purchased. It seems obvious that two tracks would have been far from adequate to handle all of the transfer of cars among all of the railways, even though the actual classification and switching was performed by the individual roads. For many years, until well after the turn of the century, maps showed the trackage in accordance with the original plan, although construction never took place. The land continued to be known as the Stickney Tract until its later development by the Belt Railway and the Clearing Industrial District.

The first extensive yards at Clearing were constructed by the Chicago Transfer and Clearing Railway Company in 1902 (*ibid.*). That company then owned a large part of the original Stickney Tract, 3,700 acres from Sixty-third Street to Seventy-ninth Street, and from the then city limits westward to the Drainage Canal. Because the tract was considerably larger than that required by the yards when they were finally constructed, the Clearing Industrial District with considerably more than a hundred manufacturing plants, the Corn Products Refining plant at nearby Argo, and the

of over six thousand car classifications per day. Special facilities such as an icing plant and stock yards for livestock in transit enable the yard to handle and service all types of shipments.

Clearing Yard is located just outside of the Chicago city boundary, about fifteen miles southwest of the central business district, in an area that is partly undeveloped vacant land on the rural-urban fringe and partly intensively developed with industrial plants, large and small. The yard, five miles in length, extends between the Belt Railway Company's line on the east and the peripheral joint line of the Indiana Harbor Belt and Baltimore and Ohio Chicago Terminal on the west (Fig. 3). All three of the major belt railways of Chicago, as well as the thirteen trunk line companies that, through ownership of the Belt Railway Company of Chicago, own the yard, have access to it directly. Transfer trains over all of those railways are scheduled to connect with the road freight trains of the trunk lines at the latter's classification yards. Scores of such trains operate between the trunk line yards and Clearing each day.

Clearing Yard is ideally located for the function that it performs. It is near the areal center of the terminal district, is between the two principal circumferential belt routes, and is easily accessible from all directions. Furthermore, the numerous industries in the vicinity, including those of the Clearing Industrial District as well as many new large plants erected in 1941 and 1942, are well served by switching movements directly to and from the classification tracks of the yard, thereby making intermediate hauling and yarding of the cars unnecessary. A shipment from the Clearing Industrial District, for example, southbound over the Illinois Central, is switched directly to the appropriate track in the classification yard at Clearing, placed in a

huge Dodge airplane engine plant could be constructed without the long and difficult process of assembling numerous small parcels of land that were in diverse ownership.

By 1927 the traffic through Clearing Yard had expanded to such an extent that 4,000 cars per day moved over the hump (*Railway Age*, LXXII [1927], 1691-94).

The braking of the cars in their descent from the hump, as in most older classification yards, was for many years performed by riders, who risked their lives in the dangerous operation of setting hand brakes on the cars as they rolled down the hump. In 1938 the yards were completely modernized and retarders were installed.

transfer train that takes it to Markham Yard, where it is classified directly into the Illinois Central train that carries it to its southern destination. Only two yardings, therefore, are necessary between the loading of the car and its final movement out of the metropolitan area toward its destination.

The five miles of yards that comprise the freight classification facilities at Clearing are arranged in an east-west alignment between the two concentric belt railways. The classification hump, located midway between the two ends of the yard system, is designed to enable eastbound and westbound trains to be classified simultaneously. Duplicate sets of arrival, classification, and departure yards provide for east- and southbound movements without conflicting in any way with north- and westbound movements.¹ A long double-track route, parallel to and slightly more than one mile north of the yard system gives access from the Belt Railway Company's line on the east, to the west end of the yard, where the eastbound arrival and westbound departure tracks are located.²

The Belt Railway Company's main line, a facility closely related to the efficient functioning of Clearing Yard, is entirely within the City of Chicago and the adjoining suburb of Cicero. It is an L-shaped route at an average distance of seven miles from the central part of Chicago. Its northern end is at Cragin, near the east end of the Milwaukee Road's Galewood Yard. From there it extends due south, parallel to and two blocks east of Cicero Avenue, crossing all of the railways that enter Chicago from the west. A strip of at least one block in width, and in many places considerably wider, is intensively developed with industrial plants served by sidetracks from the Belt Railway. The largest of them is the Western Electric Company plant in Cicero, just west of the Belt Railway and connected to it by the Manufacturers Junction Railway, an intra-plant line. The western railways that the Belt Railway intersects exchange traffic over short connecting

¹"Belt Railway Company Rebuilds Clearing Yard," Railway Age, July 30, 1938.

²That important double-track route leading into Clearing Yard passed directly across the land that was required for expansion of the Chicago Municipal Airport. In 1940 a new right-of-way was provided by the City of Chicago north of the airport, in exchange for the old railway route, the site of which is now used as the principal east-west runway of the enlarged airport.

tracks and yards located at the intersections. Clyde Yard of the Burlington, Hawthorne Yard on the Illinois Central's main line to the west, Elsdon Yard on the Grand Trunk Western, and Corwith Yard on the Santa Fe, the principal Chicago classification yards of their respective railway systems, are all reached directly from the Belt Railway over short connecting tracks. At Clearing Yard the Belt Railway turns sharply eastward to the Calumet district, intersecting the southern and eastern trunk lines. For much of the distance between Clearing and the eastern end of the line, the Belt Railway is paralleled by the South Chicago branch of the Rock Island. The latter furnishes an entrance for the Rock Island into the Calumet area as well as a connection with the eastern railways. Both the Belt Railway and the Rock Island operate yards in close proximity along Ninety-fifth Street, north of Lake Calumet.

The Belt Railway Company of Chicago, the line of which forms the greater part of the middle belt route around Chicago, is a noteworthy example of the co-ordination of facilities by a large group of trunk line railways in order to eliminate duplication of trackage, yards, and the consequent waste of money and land. By the use of the Belt Railway facilities each of its owner railways has, in effect, a direct route serving more than four hundred industries including some of Chicago's most important, as well as a huge classification yard.

The inner belt route.--The inner belt route is more complex in its functions and operations than are either the peripheral or the middle belt routes. It is not a single railway line, but rather a group of several railways, operating on closely parallel rights-of-way over a single elevated embankment. Each component railway serves a particular function in the general rail pattern of the metropolitan area.

The inner belt route extends north and south for ten miles parallel to and near Western Avenue. At its nearest point it is less than two miles west of downtown Chicago. For its entire length it is lined by industrial establishments which are served by numerous sidetracks and local yards. At several points within especially intensively developed industrial areas, freight stations for less-than-carload freight are located.

Along the inner belt are several concentrations of yards, composed, in each case, of two or more individual yards, each operated by a different railway. The northern end of the line is at

one of these groups of yards, at Western Avenue and Kinzie Street, where cars are received from and delivered to the Western Avenue yards of the Milwaukee Road and the Chicago and North Western. Transfer trains operate from those yards to Galewood, to Bensenville, and to Proviso. For two miles south from that point, the inner belt route is owned and operated by the Chicago and North Western and the Pennsylvania, each having a separate right-of-way on a common embankment. The former uses the route for access to the Union Stock Yards, the South Water Street Produce Terminal, and the Wood Street team tracks at Western Avenue two miles south of Kinzie Street. The Pennsylvania uses that section of the inner belt as a local switching and industrial line, and as a route for transfer of freight cars between intersecting lines.¹

An important group of yards is located just east of the inner belt line between Roosevelt Road (Twelfth Street) and Sixteenth Street, where the line intersects the east-west routes of the Burlington and the Baltimore and Ohio Chicago Terminal railways.² That group of yards includes the Western Avenue Yard of the Burlington, the Wood Street team tracks of the Chicago and North Western, and the Lincoln Street coach yard, servicing the passenger equipment of the Baltimore and Ohio and its tenant lines.³ South of those yards the inner belt route is a wide series of tracks carrying the trains of many railways en route to and from the industries in the vicinity, the Union Stock Yards, and several nearby freight terminals. The stretch between Roosevelt Road and Thirty-ninth Street is one of the busiest stretches of railway in

¹The "Panhandle" (P. C. C. and St. L.) passenger trains formerly used the route, but now enter Chicago from the Calumet district over the main Pennsylvania line passing through Englewood, reaching that line from the "Panhandle" over the South Chicago and Southern just east of Lake Calumet.

²The Baltimore and Ohio Chicago Terminal Company's east-west line furnishes the entrance route to Chicago for passenger and freight trains of the Chicago Great Western and Soo Line from the western suburb of Forest Park. East of Western Avenue it also carries the passenger trains of the Baltimore and Ohio and Pere Marquette on the inner leg of their circuitous route through the city.

³The Lincoln Street (Wolcott Street) facilities, including coach yards, shops, and roundhouse for passenger locomotives was constructed after 1915, when the Union Station project caused abandonment of similar facilities closer to downtown Chicago (Report of John F. Wallace, Chairman, Chicago Railway Terminal Commission [Submitted to the Mayor and City Council, March, 1921], pp. 17-19).

Chicago. South of Thirty-ninth Street the line is primarily a freight route for the Pennsylvania, and a freight and passenger route of the Baltimore and Ohio. The former railway's important Fifty-ninth Street classification yard is located on the inner belt, which forms the main freight line of its subsidiary, the Pittsburgh, Cincinnati, Chicago and St. Louis.

Belt lines and the city structure.--The three belt line routes: inner, middle and peripheral, and the many radial trunk lines give to the City of Chicago and its nearby suburbs the effect of a cellular pattern. The built-up sections of the metropolitan area are divided into compact units, separated from the neighboring units by railways and the strips of industrial land that commonly are found on both sides of the freight-carrying lines. Orientation of the railways in conformance with the grid-iron pattern of city streets emphasizes that characteristic. Because most of the lines, especially close to the center of Chicago, are on elevated embankments, they form physical barriers that set off adjoining areas one from another. That encourages the development of distinctive neighborhood units, with homogeneous economic, social, and ethnic characteristics, within many of those cells.¹ That condition is somewhat of a disadvantage to the city in that it impedes free, easy access from one part of the city to another, but is an advantage in that it furnishes physical lines of demarcation, within which the planner is presented with the opportunity of developing physically integrated neighborhood areas or "superblocks." Most such cellular areas are within the blighted and near-blighted parts of the city where a high proportion of the structures are substandard and have neared the end of their economic lives. In the rebuilding of such areas, by utilizing the railway boundaries, the planner has the opportunity to develop real communities with homogeneous characteristics. The industries along the borders of such communities can furnish employment to the residents, who will dwell toward the center of

¹See for example Harold M. Mayer, "South Lawndale, An Island in the City of Chicago," Real Estate, XVI (November 1, 1941), reprinted in Forty-four Cities in the City of Chicago (Chicago: Chicago Plan Commission, 1942), 25-26. South Lawndale, bordered on the east by the inner belt route, on the south by the Illinois Northern, and on the west by the Belt Railway of Chicago, is typical of many Chicago communities that are completely surrounded by railways and the dependent industrial belts.

each cellular unit, away from the noise of the railway and industrial operations.

Secondary Freight Yards of the Trunk Lines

Between the commercial core of Chicago on which most of the trunk lines converge and the major or primary outlying classification yards where the majority of the road freight trains are assembled and broken up, there are, along the radial railway routes, a series of secondary classification yards, interchange yards, and industrial switching yards (Fig. 3). They are, in general, smaller than are the major outer yards, but they perform vital functions in the collection, assembly, classification, and distribution of freight cars en route to and from the industrial sidings, freight terminals, and team tracks of Chicago and its suburbs. During periods of extraordinarily heavy traffic they relieve congestion in the major yards by furnishing additional routes and facilities for the movement of through freight cars.

Locations.--Most of the secondary classification yards are located at or near the intersections of trunk lines with the belt lines, and close to areas that are intensively developed with industrial establishments. In some instances, as near Western Avenue along the inner belt line west of the central business district, two or more yards are located in close proximity where several railways, occupying joint or closely parallel rights-of-way, cross the circumferential line. Such clusters of yards are very characteristic features of the cultural landscape of Chicago. They occupy substantial areas of land. Some of them, as has been pointed out, were formerly the major Chicago yards of their respective railway lines, but became too small or functionally obsolete, or otherwise unsuited to continue functioning as the major yards.

Functions and trends.--Most of the secondary yards are used for the classification and interchange of freight handled on transfer trains to and from terminals and industrial sidings in their vicinities. A few, however, notably the Galewood Yard of the Milwaukee Road, continue to be points of origin and destination for some road freight trains that operate on especially fast schedules.

In some cases, as the South Chicago Yard of the Baltimore and Ohio and the Fordham Yard of the Illinois Central, the yards

are so inadequate or so badly located in relation to the sources and destinations of traffic that they are uneconomical to operate even for local switching. Such yards are either partially or completely abandoned, or are used only for the storage of idle cars.

The decentralization of industry from the older industrial districts within the City of Chicago to peripheral locations such as Clearing and the outer satellite cities has caused the traffic in some of the secondary yards to greatly decline. The newer industrial locations, for the most part, are on the belt lines or within easy trucking distance or switching distance of the large major yards. Some of the older secondary yards are no longer located where they can perform efficiently their original functions. Consolidation of switching, combining the operations of several yards into one of the existing but not fully utilized yards may make possible more economical and speedy handling of freight and the possible abandonment of some of the obsolete and poorly located facilities.

The intensive utilization of adjoining land for industrial, commercial or residential purposes, together with prohibitive land values in the built-up areas, has prevented the expansion of such of the older yards as are well located but obsolete in design. Modern long freight trains must be moved speedily with a minimum of switching. The "push-pull" switching that is required when yard tracks are of limited length is unsuited to the tempo of present-day freight schedules. Since the existing inner and secondary yards cannot be expanded to permit longer tracks and more efficient layouts, and since the industrial areas of the city are moving outward, the only alternative, in most cases, has been the establishment of new yards on the urban periphery or the removal of much of the freight switching to the next division point, a hundred miles or more beyond the edge of the metropolitan area.

Industrial and Local Switching Railways

Metropolitan Chicago has a number of railways which, although primarily built and operated to serve one or a group of adjacent industries that own them, are nevertheless incorporated as separate railways. In addition to such separate railways, there are many short industrial and switching lines located in nearly all parts of the metropolitan area where carload freight is shipped or received. They vary in length and importance from the short

spur track on which a car or two may be placed alongside the loading platform of a small industrial plant, to lines many miles in length that are separately incorporated.

The pattern of industrial and switching spurs coincides, in general, with the pattern of heavy industries in the metropolitan area.

The advantages of separate incorporation of a large industrial switching or intra-plant facility are several. They include profits on per diem rental charges of the short line's cars that operate in through movements over other railway lines with which the switching line connects directly or indirectly, the switching charges collected by the short line for placing cars on the industrial sidings that it serves, and, in some cases, reciprocal switching privileges and exchange of passes with other railways.¹

Largest and most important of such railways in the metropolitan area is the Elgin, Joliet and Eastern, already discussed in Chapter II. It is unique, and discussed separately, not only because it has important relationships to the entire metropolitan railway pattern and because of its unusually large size, but also because a significant proportion of its traffic is in addition to that for its owner, the United States Steel Corporation.

The other industrial railways in the metropolitan area are shorter. They connect one or more industries with the major belt lines or with the trunk lines. Primarily, they serve as local switching lines for shipments originating and terminating at the industrial establishments that own them. Such services as they perform for other shippers is incidental. The International Harvester Company, for example, owns and operates the Illinois Northern Railway, which is primarily a connection between its main plant on the Chicago Sanitary and Ship Canal and the numerous railways in the vicinity, particularly those that operate over the inner belt route. The same company also owns and operates the Chicago, West Pullman and Southern, which serves the company's Wisconsin Steel plant on the Calumet River, and the several industries at West Pullman, in the southwestern part of Chicago. On the east and south shores of Lake Calumet the Pullman-Standard

¹Tan (The Belt and Switching Railroads of Chicago Terminal Area) discusses additional reasons why short switching lines are incorporated separately from the industries that own them.

Company operates its own railway to connect the numerous plants bordering that lake on the west and south, most of which are Pullman subsidiaries, with each other and with the belt and trunk railways. The Youngstown Sheet and Tube Company is the principal user of the interestingly named Chicago Short Line, less than one mile in length, which connects its plant at the mouth of the Calumet River with nearby trunk lines. The Pressed Steel Car Company, finally, owns the Chicago and Calumet River Railroad, which connects its main plant at Hegewisch, in the southeastern corner of Chicago, with nearby railways. Such industrial switching roads handle a considerable volume of traffic, but individually they are only of local significance in the metropolitan railway pattern.

CHAPTER IV

TRUNK LINE ROUTES IN CENTRAL CHICAGO

Near the commercial core of the City of Chicago the twenty-eight divisions of the twenty-one railway systems that enter the metropolitan area are crowded into seven major routes. The general pattern of the trunk line railways, therefore, although radial, is characterized by dendritic modifications near the metropolitan center (Fig. 5).¹ Were each line to retain its separate identity in approaching the center of the city and to operate over its own right-of-way, there would be such crowding and duplication of facilities that little if any land would be available surrounding the central business district for other than railway use.

Alignment of the Routes

The seven approach routes to central Chicago are aligned parallel to the north and south branches of the Chicago River, to the shore of Lake Michigan, and to the rectangular street grid of the city. The first routes to be constructed appropriated the water frontage; they were originally primarily feeders to the water transport routes. Such railway lines, built before the city street grid was extensive, do not, in general, conform to it. Later lines, in order to avoid excessive condemnation and the platting of irregularly-shaped parcels, were constructed with north-south or east-west alignment parallel to the city streets.

The Chicago River north branch route.--The approach from north and northwest, parallel to the Chicago River's north branch and near its west bank, is used by the Milwaukee and Wisconsin divisions of the Chicago and North Western Railway, and is the only one of the approach routes not used by more than one railway

¹The co-ordination of operations and facilities of the railways in approaching the center of Chicago was vividly pointed out by Frederic A. Delano ("The Chicago Plan with Particular Reference to the Railway Terminal Problem," Political Economy, XXI [1913], 822).

company. The lines from Milwaukee and Madison, Wisconsin,¹ converge at Clybourn, three miles northwest of the river's fork. They parallel the west bank of the river and serve the numerous industries that are located in the vicinity.² At Kinzie Street the line joins the Galena Division from the west, and both divisions of the railway share trackage into the downtown passenger

¹Those lines, the Milwaukee Division (properly, the Milwaukee subdivision of the Wisconsin Division) and the Wisconsin Division proper, respectively, share a common line between the passenger terminal at Madison Street and the junction at Clybourn. Both were constructed at about the same time and were the first lines north and northwest from Chicago. The former, originally the Chicago and Milwaukee Railroad, was opened to Waukegan in 1854 and to Milwaukee in May of 1855. Separate corporations existed in Illinois and Wisconsin and through trains did not operate until after 1858, transfer being necessary across the state line.

The original passenger depot was at Chicago Avenue and Sangamon Street, rather remote from the then business section of the city.

In 1856 suburban service was begun to Waukegan, and this encouraged the beginnings of several of the "North Shore" suburbs, including Evanston and Lake Forest, both of which developed about educational institutions that greatly benefited from the new railway service.

For the early history of the Chicago and Milwaukee Railroad see Andrew J. Aikens (Annual Report of the Commerce, Manufactures, Banking Business, and Rail Road System of the City of Milwaukee for the Year 1856 [Milwaukee: The Board of Trade, 1857], pp. 13-22), and Yesterday and Today (Chicago: Chicago and North Western Railway Co., 1905).

The Wisconsin Division, which extends directly northwest from Clybourn, was originally the Illinois and Wisconsin Railroad, organized in 1851. The line was completed to Cary, Illinois, on the Fox River, in 1854, and later extended farther northwest. It was merged with another line in 1855 to become the Chicago, St. Paul and Fond du Lac, and as such reached Madison and Fond du Lac, Wisconsin.

The passenger terminal of the Fond du Lac line was at Kinzie Street, near the original Chicago depot of the Galena and Chicago Union. Following the financial panic of 1857, the line was reorganized as the Chicago and North Western Railway Company.

In 1866 the Chicago and North Western leased the Chicago and Milwaukee, and ultimately the two lines were brought under a single ownership (Yesterday and Today, pp. 37-38).

²The north branch of the Chicago River was formerly a very busy waterway, along which lake vessels transshipped freight to and from railway cars. Many factories lined the river bank. Although the waterway has lost much of its former importance, the railway continues to serve the industrial district, which includes a large number of plants. A study completed in 1924 (Richard Hartshorne, "The Lake Traffic of Chicago" [Unpublished Ph.D. dissertation, Department of Geography, The University of Chicago, 1924]) pointed out the decline of the water-borne traffic of the north branch and predicted a rapid further decline. That prediction has been borne out by subsequent events.

terminal at Madison Street, west of the Chicago River.

The Kinzie Street route.--The second route of approach to downtown Chicago is from directly west over the Chicago and North Western's Galena Division, parallel to Kinzie Street, which extends to the northwest corner of the central business district. That route, originally developed in 1846 by the first railway to serve Chicago, extends in a due east-west direction.¹ The eastern

¹The line was the Galena and Chicago Union Railroad. It was first planned a decade before construction began, but the crash of 1837 forced abandonment. A survey had been made of the first part of the route and before the project was abandoned piles had been driven in Madison Street. The early pre-construction history of the railway is given in considerable detail by Ralph William Marshall ("The Early History of the Galena and Chicago Union Railroad" [Unpublished Master's thesis, Department of History, The University of Chicago, 1937]).

More favorable financial conditions and an increase in population and wealth of Chicago's hinterland encouraged an interest in railways during the 1840's, as did prospect of early completion of the Illinois and Michigan Canal. The plans of two Michigan lines, predecessors of the Michigan Central and the Michigan Southern, to push westward toward Lake Michigan spurred the plans for western feeders which would then no longer be entirely dependent upon boat connections with the east. In 1846 a new group of promoters, of which William B. Ogden was president, purchased the Galena road corporation charter, and employed Richard P. Morgan to lay out the line between Chicago and the lead mines at Galena in northwestern Illinois. The report was published in the following year (Richard P. Morgan, Report of the Survey of the Route of the Galena and Chicago Union Rail Road [Chicago: Chicago Tribune Print, 1847]).

A temporary depot was erected at Kinzie and Halsted streets, at the city limit one-and-one-half miles west of the proposed eastern terminal, because the City Council, evidently at the behest of local interests that feared loss of the wagon, stage-coach, and local transfer trade, refused permission to lay tracks in the city. However, a temporary track was laid eastward to the river in order to move the locomotives from ships delivering them from the east (A. T. Andreas, History of Chicago [Chicago: The A.T. Andreas Company, 1884], Vol. I). The first locomotive was the Pioneer, a second-hand locomotive built in 1836 that formerly served in upper New York State and in Michigan. It is now preserved at the Chicago Museum of Science and Industry.

The route that was surveyed, adopted, and is still used is absolutely straight in an east-west direction for thirteen miles to the Des Plaines River. The original survey provided in this section for a maximum grade of only three feet per mile (Morgan, op. cit., p. 4).

To West Chicago, a distance of thirty miles, the original route was identical with the present Galena Division main line. At that point the original line veered northwestward, crossing the Fox River near Elgin and reaching Freeport, where a connection was made with the East Dubuque-Carbondale main line of the old Illinois Central. The Galena and Chicago Union never reached Galena, and between West Chicago and Freeport the original line is now a

two miles of the route, between the Chicago River and the inner belt line near Western Avenue, is two city blocks in width and is used, in addition to the Chicago and North Western, by the parallel joint tracks of the Milwaukee Road and the Pennsylvania's "Panhandle" route. The former road curves northwest from Western Avenue,¹ and the latter turns south along the inner belt route. At Western Avenue, the west end of the wide portion of the Kinzie Street route occupied by through tracks, freight terminals, and

little-used branch. Service was first operated between Chicago and Freeport in 1853 (Galena and Chicago Union Rail Road Company, Eighth Annual Report, 1854).

¹The Milwaukee Road (Chicago, Milwaukee, St. Paul and Pacific Railway) has two trunk lines into Chicago, one from Puget Sound, the Twin Cities and Milwaukee, the other from Kansas City, Omaha, and Sioux City. The former enters Chicago from the north, the latter from the west. They converge at Pacific Junction, near the intersection of Pulaski Road and North Avenue, west-northwest of downtown Chicago. From Pacific Junction they both operate over a very wide curve to their shops and yard at Western Avenue near Kinzie Street.

Both trunk lines were constructed in Chicago at the same time, in 1872. The former was built by the Chicago, Milwaukee and St. Paul Railroad, to secure a Chicago outlet and eastern connections for that company's extensive system of lines in Wisconsin and neighboring states to the north and west. Previous to that time most of the trade of that area reached Chicago over the Chicago and North Western or moved east by lake from Milwaukee. Completion of the line secured a large new territory for Chicago's commercial trade area. Considerable opposition developed in Milwaukee, where it was felt Chicago would benefit at Milwaukee's expense (John W. Cary, The Organization and History of the Chicago, Milwaukee and St. Paul Railway Company [Milwaukee: Cramer, Aikens and Cramer, n.d.], p. 141).

The other line to Chicago from the west was built by the Chicago and Pacific Railroad, which was leased in 1880 and acquired in 1900 by the Chicago, Milwaukee and St. Paul. The original line ran from Goose Island, in the north branch of the Chicago River, westward, crossing the Milwaukee line at Pacific Junction.

Since the merger of the two lines, the original trackage between Goose Island and Pacific Junction has been used for local freight switching. The line from Western Avenue eastward along Kinzie Street, into the north end of the Chicago Union Station, was originally the entrance route of the Columbus, Chicago and Indiana Central, a part of the Pennsylvania's "Panhandle" route. A half ownership in the line between Western Avenue and the old Union Station was later purchased by the Chicago, Milwaukee and St. Paul, giving trains of that road access to the Union Station (Cary, *op. cit.*, p. 145 and The Milwaukee Road, 1847-1939 [Chicago: The Milwaukee Road, 1939], p. 14).

The Chicago, Milwaukee and St. Paul ("The St. Paul") became the Chicago, Milwaukee, St. Paul and Pacific (The Milwaukee Road) after receivership and reorganization in the 1920's.

team tracks, are the Western Avenue yards and shops of the Milwaukee Road and the Chicago and North Western. Those facilities include important passenger coach yards and freight switching yards.

The Sixteenth Street route.--Parallel to and one-and-one-half miles south of the Kinzie Street route is another east-west approach to the central part of Chicago, used by the Baltimore and Ohio and its tenants, the Chicago Great Western, the Soo Line, and the Pere Marquette,¹ by the main line of the Burlington, and by a freight line of the Chicago and North Western. The roads using the Baltimore and Ohio tracks diverge at Western Avenue, the Baltimore and Ohio and Pere Marquette continuing southward on the inner belt route, and the Chicago Great Western and Soo Line continuing westward to Forest Park over tracks of the Baltimore and Ohio Chicago Terminal Railroad, from whence they diverge. The Chicago, Burlington and Quincy, one of Chicago's most important western trunk lines, operates into the city on its own right-of-way, one-half block to the south of that of the Baltimore and Ohio, and separated from it by a narrow strip of light manufacturing and warehousing establishments and team tracks. Closely parallel, also, is the right-of-way of the Chicago and North Western, used to reach the numerous team tracks and industries in the vicinity, the nearby South Water produce terminal, and the west end of the St. Charles Air Line, over which transfer trains of the western lines cross the Chicago River and reach the lakefront line of the Illinois Central.

The Chicago-Des Plaines River route.--The fourth principal avenue of approach to downtown Chicago is parallel to the south branch of the Chicago River and the Chicago Sanitary and Ship Canal and Des Plaines River from Joliet, nearly forty miles to the southwest. The route utilizes the Des Plaines River gap, the old "Chicago Portage" through the Valparaiso moraine, and is used by the Alton and Santa Fe railways. The western line of the Illinois Central² also uses the route over joint trackage with the Santa Fe

¹The tracks, owned by the Baltimore and Ohio Chicago Terminal Railroad, and used by the four railways mentioned, are a part of the original route of the Wisconsin Central (Soo Line) built just prior to 1890, when that line was a part of the Northern Pacific system.

²The western line of the Illinois Central carries through freight to and from as far as the Pacific Coast, connecting with

from the west end of the St. Charles Air Line to Western Avenue, from where it continues west on its own trackage, crossing the Drainage Canal.

The two routes from the south.--Two important approach routes to the central part of Chicago extend directly north to their respective terminals. The westernmost, parallel to Shields Avenue, extends southward from a large lift bridge over which the Pennsylvania crosses the Chicago River, to Englewood, six miles to the south, whence it curves southeast.¹ The Pennsylvania's tracks are on the east side of a block-wide strip of railway property, the west side of which is owned and operated by the Chicago and Western Indiana Railroad. On its line that parallels the Pennsylvania are operated the through trains of the Erie, Wabash, Chicago and Eastern Illinois,² Monon, and Grand Trunk Western railways. Both the Pennsylvania and the Chicago and Western Indiana lines share a common elevated embankment.

Three-eighths of a mile east of the Pennsylvania-Chicago and Western Indiana embankment is another wide elevated embankment that carries the joint tracks of the New York Central and the Rock Island railways, and the trains of their tenant, the New York, Chicago and St. Louis (Nickel Plate Road) between the La Salle Street Station in downtown Chicago and Englewood, seven miles to

western "transcontinental" lines at Council Bluffs and Omaha, and also carries passenger trains as far west as Sioux City, Iowa. It was constructed in 1888 as the Chicago, Madison and Northern.

¹It is the route of the Pittsburgh, Fort Wayne and Chicago line, which first reached Chicago in 1857. At Fifty-fifth Street on the west side of the right-of-way is one of the major classification yards and engine terminals of the Pennsylvania in Chicago. The line is four-tracked except over the Chicago River, which is spanned by a large double-tracked horizontal lift bridge.

²The Chicago and Eastern Illinois Railroad, originally the Chicago, Danville and Vincennes, was completed in 1871 between Dolton, just south of Chicago, and Danville, Illinois. In the following year a line was opened from Danville to Terre Haute, where connection was made with an earlier road to Evansville, on the Ohio River. From Dolton to Chicago the line, which became the Chicago and Eastern Illinois in 1877, reached Chicago over the tracks of the Pennsylvania's "Panhandle" route. After completion of the Chicago and Western Indiana in 1881 the Chicago and Eastern Illinois used that line from Dolton, at first to a temporary depot at Twenty-second Street and Archer Avenue, and, after 1885, to the present Dearborn Station (Industrial Chicago, Vol. IV, The Commercial Interests [Chicago: The Goodspeed Publishing Co., 1894], p. 671).

the south.¹

The Lakefront route.--Finally, the Illinois Central's route of approach to central Chicago along the shore of Lake Michigan is one of the most efficient and ideally located--for the railway--rights-of-way in Chicago, but the cause of considerable conflict of interest between the railway and the local governmental bodies.²

¹It was one of the two earliest jointly-owned rights-of-way into Chicago, having been first used in 1852. The direct alignment is partly explained by conformity with the grid pattern of streets which in 1852 had been laid out as far south as Twenty-second Street. The Nickel Plate became a tenant in 1881. Between Englewood and the La Salle Street Station there are four main tracks and in places six. The joint route is the result of a financial interest in the Rock Island held by the directors of the Northern Indiana Railroad, a subsidiary of the Michigan Southern, which in 1869 became the Lake Shore and Michigan Southern and in 1914 became the western part of the New York Central's main line.

The Michigan Southern and Northern Indiana became interested in the Rock Island as a western feeder to its system, so that a junction was established at the present site of Englewood, permitting direct interchange of east-west traffic without the necessity of entering Chicago. The joint line was one of the first local co-ordinated terminal arrangements. For a brief history of its construction see F. J. Nevins (Rock Island Magazine, XVII [October, 1922], 5 ff.).

²The Illinois Central's route between Chicago and Carbon-dale in southern Illinois, where it joins the original main line between Cairo and Dunleith (East Dubuque), was known as the "Chicago Branch." The first section was completed in 1852. The location of the entrance route into Chicago is the result of a Federal land grant, the relationship between the Illinois Central and the Michigan Central, and the relationship between both roads and the City of Chicago.

The Illinois Central's original main routes as subsequently built in Illinois were planned as part of a huge internal improvement program that collapsed in the crash of 1837. In September, 1850, the project was revived when Stephen A. Douglas introduced a bill, which was passed by Congress, providing a grant to the State of Illinois of 2,595,000 acres of the public domain as an aid in the construction of the two railway lines, one from Dunleith and one from Chicago, to Cairo.

Meanwhile, the Michigan Central, pushing westward toward Chicago in a frantic race with its rival, the Michigan Southern, after overcoming difficulties in acquiring right-of-way in Indiana, sought an entrance route to Chicago. It was then believed that the traffic would be insufficient to support both roads, and that the first to reach the city would monopolize the business. As soon as the plans for the Illinois Central were known, the Michigan Central seized upon the opportunity of using its tracks, since it had been refused a charter to construct its own line in Illinois (Report of the Directors of the Michigan Central Railroad Company to the Stockholders [Boston, June, 1851]).

On July 12, 1851 the Illinois Central and the Michigan

Approaching Chicago from the south-south-west, the Illinois Central in Hyde Park, six miles south of the city's core, swings in a wide curve to a north-north-westerly direction, parallel to the lake shore. Formerly on piles driven into the lake bottom, the railway line is now separated from the lake by a six-mile long strip of park on artificially made land constructed as the result of relinquishment by the railway to the city of its riparian rights.¹ Nowhere on the Illinois Central's approach to Chicago is there a single grade crossing, either of a street or of another railway, and nowhere is there a sharp curve.

The route forms a part of the first large railway land-grant in the middle west, and the 300-foot right-of-way makes possible, in places, ten parallel main-line tracks. They carry

Central petitioned the City Council to lay tracks within the city, but permission was not granted for nearly a year, the City apparently favoring the rival Michigan Southern. It was feared that the Illinois Central and Michigan Central would connect south of the city, and that much of the traffic would proceed directly from one road to another through that connection without entering Chicago.

The City Council later granted the Illinois Central permission to enter the city, but only with the provision that the railway should maintain a breakwater along the lake shore route that had been selected. The lake storms had been threatening the property of shore-front residents on Chicago's then aristocratic south side, and the expense of city-owned breakwaters had aroused opposition from residents of other parts of the city. Permission to enter the city carried with it the obligation to maintain shore protection between Randolph and Twenty-second streets.

The first section of the Illinois Central to be completed was between Chicago and Kensington (formerly Calumet), twelve miles to the south, in order to permit the Michigan Central to reach Chicago. Portions of the original railway were constructed on timber trestles. Over that line the first train was operated on May 15, 1852.

Permission to use the lake front for railway purposes was granted on condition that no permanent building be erected on the right-of-way between Twelfth and Randolph streets that might obstruct the view of the lake. This provision was of inestimable value to the city later when the development of Grant Park provided Chicago with a monumental "front yard."

For further discussion of the relationship between the development of the lake front and the Illinois Central's property, see later sections of this dissertation, "Our 70 Years on the Chicago Lake Front" (*Illinois Central Magazine*, X [March, 1922], 5-24) and W. G. Nusz ("How the Illinois Central Came to Chicago," *Railway Review*, LXXVIII [March 6, 1926], 409-19).

¹That development, Burnham Park, site of the Century of Progress exhibition of 1933-34 and the route of the Outer Drive express highway, was made possible by the Lake Front ordinance of January 21, 1919.

passenger and transfer freight trains of the Illinois Central, passenger and freight trains of the "Big Four" (Cleveland, Cincinnati, Chicago, and St. Louis Railroad)¹ and the Michigan Central, transfer freight trains of the Nickel Plate Road, through freight trains of the Chesapeake and Ohio,² and on the six westernmost tracks, electric suburban trains of the Illinois Central and of the Chicago, South Shore and South Bend Railroad. Many freight trains to and from the Union Stock Yards are also handled, south of a connection with the Chicago Junction Railway at Forty-third Street.

General Characteristics of the Routes

Several characteristics are common to all of the routes of approach to the central part of Chicago. Particularly noteworthy is their width, which in some cases exceeds a city block. In addition to four or more main running tracks, the rights-of-way are also developed with freight houses, team tracks, sidings, interchange freight yards, passenger coach yards, and other accessory facilities that are required in the operation of the railways. Traffic density on the routes is high, and in some cases each of the running tracks serves a specialized function: local freight, suburban passenger, through passenger, and so forth. Most commonly the freight tracks are the outer ones, in order to serve the sidings and switch tracks without the necessity of crossing over other main tracks.

¹The "Big Four" operates over the Illinois Central for 54 miles from Kankakee to Chicago. For its history see Ared Maurice Murphey ("Big Four Railroad in Indiana," Indiana Magazine of History, XXI [1925], 109-273).

²The Chesapeake and Ohio, one of the major eastern coal-carrying roads with a main line from Cincinnati to tidewater at Old Point Comfort (Hampton Roads), Virginia, passing through the West Virginia and eastern Kentucky coal fields, operates a branch line between Cincinnati and Chicago. The line was formerly the Chicago, Cincinnati and Louisville. It was completed to a connection with the Illinois Central at Riverdale in 1906, and was merged with the Chesapeake and Ohio in 1910. Passenger trains were operated from Hammond into Dearborn Station over the Chicago and Western Indiana from 1910 to 1925, when the Illinois Central's passenger station was first used by the Chesapeake and Ohio. Since 1933 the railway has not operated passenger trains into Chicago. Through passenger cars to and from east of Cincinnati are run over the "Big Four" and via the Illinois Central north of Kankakee. Several daily freight trains operate from Chicago to Cincinnati.

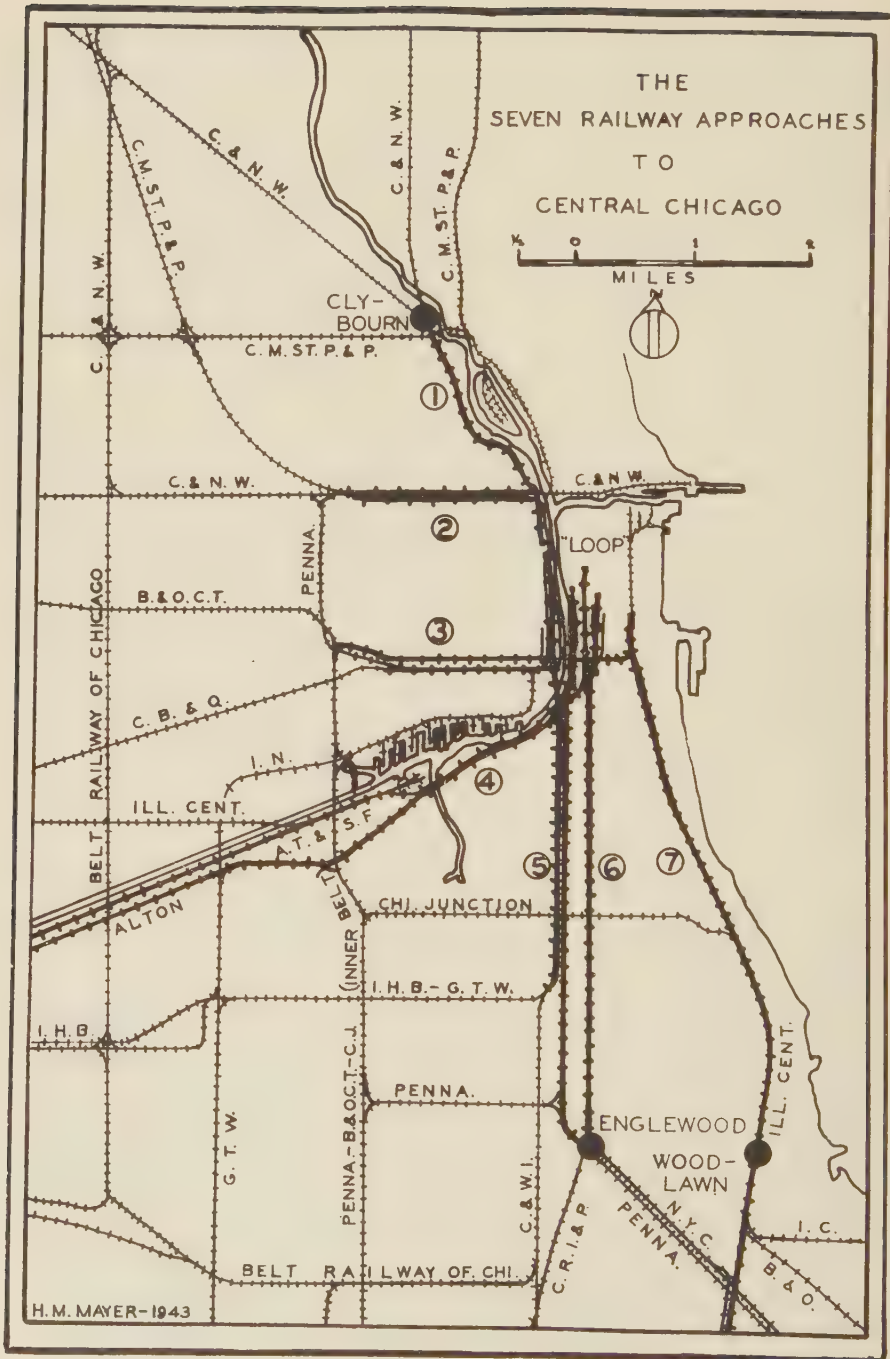


Figure 5

The high degree of co-ordination of operations of the many railways that share common routes is an important factor in the shaping of the metropolitan railway pattern. With a very high traffic density, the co-ordination of through train schedules, transfer movements, switching, and train "back-up" into the passenger terminals must be integrated to an amazing degree in order to avoid conflicts and delays.

The seven major routes leading to central Chicago are the "main stems" of Chicago's railway passenger traffic, and are also of considerable importance to the freight movement, particularly of less-than-carload freight.

Effects of the Routes upon the Industrial and Residential Patterns

The effects of the seven routes of approach to central Chicago upon the localization of industry and upon the pattern of residential areas are noteworthy and of great importance throughout metropolitan Chicago.

Relation to industrial localization.--Each of the seven routes, with the exception of the one along the lake front, is characterized by a large number of industrial sidings, serving, for the most part, small and medium sized industries, many of which are in multi-story loft buildings. Those industries are also served by freight stations for less-than-carload freight. Many industries not otherwise having direct rail service locate close to the freight stations in order to be close to downtown Chicago and to minimize trucking distance.

The result of the seven routes has been the development of wedges or strips of industry radiating from the commercial center of Chicago. Two such strips, along the two branches of the Chicago River, had already begun their industrial development during the era of water transportation that preceded the coming of the first railways to Chicago, but the railways undoubtedly enabled them to maintain their importance long after navigation on the rivers became relatively unimportant as a factor in the localization of industry in the central part of Chicago. The lake front route of the Illinois Central, with the lake and park on one side, and with residential areas on the other, encouraged by the excellent local passenger service of the railway, failed to attract many industries within the City of Chicago. Each of the remaining four

routes, however, passes through long strips of manufacturing, processing, and warehousing establishments that are in many places at least two city blocks in width. The two river routes pass through industrial areas that are considerably wider and that extend for miles beyond the commercial heart of the city. Thus the pattern of industry in the belt surrounding central Chicago, for a distance varying from three to seven miles, is radial, corresponding to the routes by which the railways reach the urban center.

Relation to residential areas.--The pattern of residential areas of Chicago, no less than that of the industrial areas, is greatly affected by the pattern of the radial railway approaches to the heart of the city.

The smoke and noise that in the past have been the inevitable accompaniments of railway operation, together with the advantages that the main line railways offered for the location of industries, have forced residential development to take place mainly in the interstitial areas between the prongs of industry along the railway axes. Until the development of the belt lines, a generation after railways first reached Chicago, the radial lines close to the city's center offered, in addition to the river and lake shores, the only suitable locations for the heavy industries. The requirements for residential use of the land were not so specialized as were those for industrial use; and as a result the residential development took place in the areas that remained after the industrial sites had been appropriated. In many cities the railway routes, as the result of the necessity for low gradients, are located in the lower areas, particularly in river valleys. In Chicago, on the other hand, differences in elevation of the land are not sufficiently important, in general, to affect greatly the use of land, and the railways themselves are major influences upon the general pattern of land use. The result is that in Chicago a wedge-shaped pattern of residential areas close to the center of the city has developed. Between each pair of railway approaches is a pie-shaped residential area, with its apex close to the commercial core of Chicago, where the railway lines forming the borders of the residential wedges converge.¹ Each

¹Federal Housing Administration, The Structure and Growth of Residential Neighborhoods in American Cities (Washington: Government Printing Office, 1939), pp. 15-26.

wedge widens with increasing distance from the urban center. Such areas, except for the proximity of industrial and railway uses of the adjoining land with the resultant noise, smoke, and general ugliness, are desirably located with relation to centers of employment, local intra-urban transportation routes, and convenience of access. They are, however, the most deteriorated residential areas of Chicago and constitute the blighted areas of the city, the areas that the planner and developer must first attack and redevelop.¹ In the redevelopment process, the relationships between the railways and the residential land are vital parts of the problem. Fortunately, some encouragement for the rehabilitation and rebuilding of such areas for residential use is afforded by the movement in recent years of industry outward toward the periphery of the urban area, by the obsolescence of many of the older industrial structures close to the center of the city, and by the new developments of types of railway motive power that result in considerable reduction in the amount of noise and smoke. It may well be that the residential wedges will widen at the expense of the industrial strips that separate each wedge from its neighbors.

Traffic on the Seven Routes to Central Chicago

The freight traffic on the trunk line routes close to the center of Chicago has been declining in volume and in relative importance during the years immediately before the outbreak of the second World War. Road freight trains, with very few exceptions, do not originate or terminate close to the heart of Chicago; the cars are assembled into trains and distributed from the road trains in the classification yards, five to twenty miles from the urban center. To reach the yards from the industries along the seven major routes near downtown Chicago, or to reach the industries from the yards, the cars are handled in transfer trains with high cost to the railways and with considerable delay as the result of halts to pick up or drop cars at the numerous sidings and freight stations along the way. The more intensive the industrial development along a radial route, the slower is the movement to and from the classification yards. Industries, furthermore, are restricted by the limited amount of land available for expansion in the cen-

¹Types of Planning Areas in Chicago, a map prepared by Research Division, Chicago Plan Commission.

trally located areas served by the railways. It seems probable that the decline of industry near the heart of Chicago will continue. It likewise seems probable that, along with that decline, the movement of freight over the radial routes inside of the inner belt line will continue to decrease in relative importance. The motor truck, with its flexibility, has already largely displaced the "trap" and "peddler" cars in the pick-up and delivery of less-than-carload freight, thereby relieving to a moderate extent the congestion of railway traffic on the lines close to the center of Chicago.

The passenger traffic on the seven radial routes near the center of Chicago is very heavy. The major passenger terminals are all located within, or on the border of, the commercial core of the city. Although several outlying way stations, notably in Englewood on the New York Central, Rock Island, Pennsylvania and Chicago and Western Indiana lines, at Woodlawn on the Illinois Central and Michigan Central, and in Oak Park and Evanston on the Chicago and North Western, are stopping points for through trains, the vast majority of the passengers, both on through inter-city and on suburban trains, are carried to and from the central part of the city. The concentration of passenger traffic at the focus of the railway lines has been an important factor in the anchoring of Chicago's commercial core. In few American cities has the location of the commercial center been as stable as that of Chicago's "Loop" district. The band of steel that encircled the district as early as 1856, and the establishment of railway termini on the borders of the district have confined the expansion of commercial activity.

In order to understand the relationships between the commercial center on the one hand and the location of the facilities required by the railways on the fringe of the commercial center on the other, it is necessary to consider the functioning and localization of such facilities, including freight terminals, passenger coach yards, shops, roundhouses and associated maintenance facilities, and, finally, the passenger terminals. Each is localized as the result of the relationships of their functions to the operation of the metropolitan railway pattern on the one hand and the general urban pattern on the other.

CHAPTER V

MISCELLANEOUS TERMINAL FACILITIES IN CHICAGO

Many commodities handled by the railways require special types of terminal facilities. Such facilities in many cases are important elements of the railway pattern of metropolitan Chicago. In addition, general freight terminals, serving shippers that are not located directly on railway lines, or that do not handle a sufficient volume of freight to warrant private sidings, are characteristic and vital elements of the pattern. Other significant elements of the railway pattern are the coach yards for the servicing of passenger equipment, roundhouses, and shops for the maintenance and repair of motive power and rolling stock. For convenience in discussion, these many widely varied types of facilities are considered in this chapter.

Terminal Facilities for Produce, Livestock, and Grain

Although many of the commodities handled by the railways require special types of terminals, those for produce, livestock, and grain are of particular significance in the development of the railway pattern of metropolitan Chicago. Such terminals are not only important and conspicuous features of the cultural landscape but are also closely related in their locations to the other features of the urban pattern. In their locations they illustrate several of the principles and trends that have also characterized other features of the railway pattern.

Produce terminals.--In the City of Chicago produce is handled at a number of specialized team tracks which together occupy many acres of land and are the foci for the localization of a number of important associated facilities.¹ In the team track

¹Each group of team tracks consists of a series of parallel tracks, most commonly in pairs, upon which cars may be placed for direct loading and unloading to and from motor trucks and drays, which are drawn up on concrete driveways between the tracks in such manner that the rear doors of the conveyances are placed directly alongside of the freight car doors.

areas that serve as produce terminals, auction houses, exchange buildings, and other conveniences for the transaction of the produce business are provided.

Of major importance among the terminal facilities of Chicago is the Chicago Produce Terminal, which handles approximately 70,000 cars of fruits and vegetables each year, and has a total capacity of 2,050 cars at one time. That terminal, operated by the Illinois Central and Santa Fe railways, two of the principal carriers of produce to Chicago from the west, is located on the south bank of the Chicago River at Ashland Avenue and Thirty-first Street on the joint line of the two railways, slightly more than three miles southwest of the central business district. In addition to handling fruits and vegetables that reach Chicago from the west, the terminal also receives watermelon and other produce that the Illinois Central carries from the south, the cars reaching the terminal from the lake front Illinois Central line over the St. Charles Air Line route. To handle the large amount of business, the terminal is equipped with a large auction house having 80,000 square feet of floor space and a daily capacity of 125 cars, public team tracks, inspection platforms, and classification and "hold" yards to handle the cars awaiting unloading. The facilities extend from Ashland Avenue to Western Avenue, a distance of one mile. At the western end the terminal's classification yards are directly connected, not only with the main western lines of the Santa Fe and Illinois Central, but also with the inner belt route. That connection permits direct access to and from the terminal for practically all railways entering the city.

The localization of the Chicago Produce Terminal, as well as that of the South Water Market, another very important facility for the handling of railway traffic in produce, illustrates the almost universal trend toward decentralization and peripheral movement of the railway facilities of the metropolitan area. In addition, there is an important reciprocal relationship between the locations of the two groups of terminals. Formerly the Illinois Central's produce receipts were handled in the crowded yards of that railway on the lake front north of Randolph Street, near the mouth of the Chicago River and adjoining the central business district. The Santa Fe also handled its produce traffic at a terminal relatively close to the central commercial area of the city. Those facilities, and particularly the ones of the Illinois Central, were

located within easy access, by horse-drawn wagon, of the South Water Street Market, the center of Chicago's produce trade. The market was then located on the south bank of the Chicago River's main stem. It extended for nearly a mile in an east-west direction just to the north of the business center of the city. Construction of Wacker Drive, a wide double-decked avenue along the river bank, necessitated removal of the produce market. The new South Water Market was established in a group of modern buildings southwest of the business center, along Sixteenth Street. It is on the Sixteenth Street rail approach used by the Baltimore and Ohio, a freight line of the Chicago and North Western, and by the Burlington and a number of other railways (Fig. 6). Those railways furnish rapid access to the market for inbound cars, and the combination of rail service, adequate streets, and proximity to downtown Chicago yet outside of the congested area, make the location almost ideal for a produce terminal. That terminal, the South Water Market with its associated team tracks along the Sixteenth Street route, was undoubtedly the principal localizing factor in the location of the other produce terminal, the Chicago Produce Terminal of the Illinois Central and Santa Fe. The latter is located on the nearest site that was available to the South Water Market. The two terminals are mutually inter-dependent.

In addition to the Chicago Produce Terminal and the South Water Market, numerous other team tracks for the handling of produce are located within two or three miles of central Chicago, principally along the railways that approach the center of the city on the route between Fifteenth and Sixteenth streets. At several of the team track terminals, specialized handling is given to a limited number of kinds of produce. For example, the Wood Street terminal of the Chicago and North Western, the westernmost of the group of produce terminal facilities, specializes in the handling of potatoes.

Most produce in transit moving to points beyond the metropolitan area is re-iced at special icing tracks, served by ice conveyors from nearby plants manufacturing the ice. Such facilities are provided at nearly all of the principal classification yards of the belt and trunk line railways.

Stock Yards.--Chicago is the principal American concentration point for livestock, and is the primary center of the meat packing industry. The facilities for the handling of livestock

in the metropolitan area are among the largest, most extensive, and most complex, in the world. The movement of livestock through the area is predominantly from the grazing and agricultural areas of the west to local markets and to eastern consuming centers. Because transportation of packing house products in refrigerator cars is more economical than the transportation of livestock, most of the stock is slaughtered and processed before reaching its final destination.

Stock moving to Chicago by rail falls into two categories, that which is to be slaughtered locally, and that which is to be transferred between western and eastern railways for through movement to eastern markets. Of the western railways the Burlington, Chicago and North Western, Milwaukee Road, Illinois Central, Rock Island, Chicago Great Western, and Santa Fe bring to Chicago the greatest number of carloads; and the Pennsylvania, Baltimore and Ohio Nickel Plate, and New York Central carry the greatest volume of stock and packing house products between Chicago and the east.¹ Nearly all of the railways reaching Chicago, however, participate to a greater or lesser extent in the traffic. Several of the principal packers operate their own lines of refrigerator cars, which are leased to the railways.

The facilities for the handling of livestock in transit through the terminal district are, in general, located near the edge of the district. They include pens, chutes, barns, and other equipment for unloading, resting, feeding, watering, and reloading. The necessity for the operation of such facilities by the railways arises from Federal laws that prohibit the continuous transportation of livestock under any conditions for more than thirty-six hours. Both stock in transit through metropolitan Chicago and that for local slaughtering is serviced outside of the Union Stock Yards. The time consumed in the switching and placement of cars at the Chicago stock yards, together with the time en route between the last previous stopover point and the arrival in Chicago, commonly exceeds the 36-hour limit, necessitating the use of facilities on the trunk lines west of the Chicago Union Stock Yards.

Stock yards for the caring of livestock in transit are provided by the railways that handle such traffic, and are mainly

¹Union Stock Yards and Transit Company, Seventy-fifth Annual Live Stock Report, Year 1940, and Summary for Years 1865 to 1940 (Chicago, 1941).

located near the western edge of the metropolitan area. They are large and extensive. Because they are incompatible with intensive urban use of land, they are located well beyond the limits of the built-up urban area. The Chicago and North Western facilities, for example, are at West Chicago, thirty miles from the Union Stock Yards. They include a covered receiving shed 620 feet in length containing 15 loading and unloading pens, and a large number of open pens and chutes. One thousand acres of adjoining land are used for the grazing of the stock in transit.¹ The Burlington, likewise, operates similar facilities near the western edge of the metropolitan area at Montgomery, on the Fox River three miles southwest of Aurora and forty miles from Chicago. Other western railways operate facilities of that type, though somewhat smaller.

The belt lines, too, operate stock yards for the handling of livestock in transit over their lines. Large feeding yards for livestock, including poultry, are operated by the Belt Railway of Chicago at the Clearing Yards, and the Indiana Harbor Belt Railroad maintains extensive feeding yards at Calumet City, south of Chicago and near its East Blue Island classification yards.

Most extensive of all are the Chicago Union Stock Yards. Well over a square mile of area, five miles southwest of the central business district of the city, is occupied by the stock yards and the packing plants associated with them. The entire southwest portion of the city has been affected by the location of those facilities.

With the opening of railways to the west, Chicago, in the 1850's, became the leading livestock center of the United States. At that time each of the western railways operated its own receiving yard for stock on the western edge of the city, but it soon became evident that the duplication of facilities was uneconomical and a detriment to the expansion of the city. By 1864 there were six separately operated stock yards, each on the line of a different railway. The traffic was interchanged with the eastern railways and moved to the eastern markets without being slaughtered in Chicago. The refrigerator car had not yet been perfected. The complexity of interchange from a half-dozen stock yards to an

¹"C. and N. W. Opens New Stock Yards," Railway Age, LXXXVII (October 19, 1929), 936 ff.

equal number of eastern railways was enormous, and the noise and odor were objectionable to the residents of the city. In 1865 the problem was solved by the opening of the Union Stock Yards at what was then the southern edge of the City of Chicago, outside of the built-up area, at Ashland Avenue and Thirty-ninth Street. To the new stock yards each railway that participated was given the privilege of operating its trains directly, without the necessity of switching over another line, and, originally, without the assessment of switching charges.¹ In exchange, the railways abandoned the several stock yards that they had been using and which had not been co-ordinated. The Burlington, for example, sold its stock yards to the new association, in return for a share in the new enterprise.² The other railways that had been operating individual stock yards made similar arrangements in order to participate in the new Union Stock Yards and Transit Company, which was to provide both terminal facilities and rail lines to make them accessible.

The Union Stock Yards are reached by a line of railway, constructed in 1865, which later became the Chicago Junction Railway.³ The line extends in an east-west direction, five miles south of the central business district, between the line of the Illinois Central on the lake front and the inner belt route near Western Avenue. It crosses the lines of the Pennsylvania, Chicago and Western Indiana, New York Central and Rock Island, there-

¹Edward A. Duddy and David A. Revzan, The Changing Relative Importance of the Central Livestock Market, University of Chicago Studies in Business Administration (Chicago: The University of Chicago Press, 1938), p. 3.

²Chicago, Burlington and Quincy Railroad Co., Annual Report, 1866, p. 13.

³Both the Chicago Junction and the Chicago River and Indiana are controlled by the New York Central System. In 1922 the Interstate Commerce Commission authorized the New York Central to acquire control of the Chicago River and Indiana, and at the same time authorized the latter Railway to acquire the Chicago Junction Railway by lease. The New York Central supported its application by showing that it was in need of additional Chicago terminal facilities in order to meet competition, and that it could not then build up terminals for itself because of the "pre-emption of real estate and the high level of land values, rendering the cost of new construction prohibitive. It pointed out that the Junction and River road properties have a strategic location which could not be reproduced at any price" (Railway Review, LXX [May 22, 1922], 766).

by giving direct access to the stock yards from each of the major trunk lines as well as an important belt line.

In order to avoid the delay and expense of stopovers when the transit time exceeds the 36-hour limit, the livestock traffic is, whenever possible, handled directly to and from the stock yards with a minimum of switching and intermediate yarding. The volume of the traffic permits long solid trains of stock to be moved directly to the Union Stock Yards without, in many cases, classification at the outer yards on the periphery of the metropolitan area. In those instances in which the stock constitutes but a portion of a train load, the stock cars are placed at the head or tail end of the train before it enters the metropolitan area, so that the cars may be immediately detached at the classification yard and hauled directly to the stock yards. Livestock is delivered by the locomotives and crews of the road-haul carriers directly to the unloading chutes. Horses are delivered by the road-haul carriers to the Halsted Street yards of the Chicago Junction Railway, from whence they are switched by that line to express chutes for unloading.¹

To handle almost ten million head of livestock that are received annually at the Union Stock Yards, the terminal company operates 7,500 pens, many chutes, terminal buildings, and a complex network of more than 100 miles of tracks. Those facilities form a conspicuous node in the railway pattern of the metropolitan area. The Union Stock Yards, the Chicago Junction Railway and its affiliated Chicago River and Indiana Railway that serves the Central Manufacturing and Stock Yards districts, are noteworthy examples of the co-ordination of facilities and their joint operation on behalf of many railway companies.

Grain elevators.--The facilities for the handling of grain in metropolitan Chicago, no less than those for produce and livestock, are conspicuous and important features of the landscape, localized within a few limited portions of the metropolitan area.

The location of Chicago at the southwesternmost corner of the Great Lakes and nearest the great grain producing areas, has made possible the development of a tremendous traffic in grain, which is stored and transshipped at a number of large and efficient

¹Joseph G. Knapp, "Chicago Livestock Transportation Arrangements," Journal of Business, III (1924-25), 73.

elevators on the waterfronts of Chicago. The principal elevators are located along the Chicago and Calumet rivers, particularly along the latter, which is freely accessible by the largest of the Great Lakes steamships.¹ During the season of navigation, which usually extends from April until the end of November, the lake movement of grain eastward from Chicago forms one leg of a triangular route for the large lake freighters. Those ships, many of which have capacities in excess of ten thousand tons, transport iron ore from Lake Superior to the steel mills of the Calumet district, grain from the local elevators in that district to Buffalo for further movement eastward, returning to Lake Michigan or Lake Superior with coal from Lake Erie ports.² During the winters, when navigation is closed, millions of bushels of grain are normally stored in the Chicago elevators awaiting eastbound ships for movement in the spring.³

To handle the normal annual movement of approximately 160,000,000 bushels of grain through the Chicago Terminal District, the local elevators have a combined capacity of 51,229,000 bushels. By far the greatest single concentration of elevators is along the Calumet River. Several of the largest in that area are owned by the railways, and either are railway-operated or are leased for private operation.

The grain elevators are tremendous structures which are visible for many miles. Together with the associated switch tracks and "hold" yards for cars awaiting loading or unloading, they occupy large acreages.

The Chicago and North Western Railway, which hauls more

¹For descriptions of navigation and terminal facilities on the Calumet River see: U. S. Army, Corps of Engineers, The Port of Chicago, Illinois, Lake Series No. 4 (rev. ed.; Washington: Government Printing Office, 1937), and Chicago Plan Commission, The Calumet Industrial District: A Preface to a Comprehensive Development Plan, Prepared by Charles A. Blessing and Harold M. Mayer (Chicago, 1942).

²U. S. Army, Corps of Engineers, and U. S. Maritime Commission, Transportation on the Great Lakes, Transportation Series No. 1 (rev. ed.; Washington: Government Printing Office, 1940). That publication contains a detailed account of the commodity movements on the Great Lakes.

³The lake movement of grain was insignificant in 1942 because ships were diverted to handle a record volume of ore. Grain moved east from Chicago over all-rail routes.

grain, particularly wheat, to the Chicago metropolitan area than does any other railway,¹ owns, on the west bank of the Calumet River, one of the world's largest grain elevators, with a capacity in excess of 9,000,000 bushels. That concrete and steel structure can unload 20 cars of grain per hour and can load on ships 100,000 bushels in the same time. The elevator is equipped with 12 spouts for loading of vessels, 6 legs for loading of cars, a marine leg for unloading ships, 6 receiving legs, 24 car pits with power shovels, and 24 scales, as well as complete equipment for cleaning and drying the grain. Serving the elevator are 6 tracks, with a capacity of 150 cars, and an extensive railway yard for cars awaiting unloading. The facility is not on any direct line of the Chicago and North Western Railway; to reach it from that system the cars must be handled over an intermediate belt line. The location, however, is well suited for an elevator because it is accessible by the largest lake ships, including many that could not move up the Chicago River to any point on the North Western railway system.

The Rock Island, another western line that hauls considerable grain into Chicago, operates a large elevator nearer the mouth of the Calumet River, at Ninety-third Street, four miles north of the Chicago and North Western facility. The Rock Island elevator, second largest in the metropolitan area, has a capacity of four million bushels. To serve it the railway uses its South Chicago branch, extending from the main line five miles to the west parallel to Ninety-fifth Street. The Rock Island and Chicago and North Western elevators together account for half of the total waterfront grain elevator capacity of the terminal district.

General Freight Terminal Facilities of Central Chicago

Surrounding the central business district of Chicago is a belt of railway freight terminals that offers a challenge to the city planner and to the railways (Fig. 6). Partly obsolete in design, in many instances poorly located for efficient railway operation, some of the terminals form serious obstacles to the logical and orderly development of the area. Besides exercising

¹Chicago Board of Trade, Annual Report of the Trade and Commerce of Chicago (Chicago, 1942), pp. 5 ff.

a detrimental effect upon the development of their vicinities and forming barriers between the business and residential areas of the city, such terminals, in many instances, are a source of considerable excessive operating expense to the railways.

Location and nature of central freight houses and team tracks.--The central or downtown freight houses and team tracks are located principally along the seven railway routes that reach the central part of the city. They are beyond the edge of the compactly developed commercial center, and are in the belt of wholesale and light manufacturing establishments and blighted residential neighborhoods that surrounds the business district.

Many of the downtown freight terminals may be regarded as survivals of the period before the development of the belt lines, the motor truck, and the co-ordinated metropolitan rate structure. Formerly each railway sought to locate its freight terminals close as possible to the central core of the city. Cut-throat competition for the selection of sites was the rule. Each railway had access only to the terminals and industries along its own lines and co-ordination of terminals was very rare. Switching was costly, not only to the railways, but to the shippers as well, because the charges for switching of long-haul traffic were generally not absorbed as they now are. Furthermore, the horse-drawn wagon was extremely limited in the distance which it could haul freight between shipper or consignee and the railway cars. Most of the freight terminals that were originally established in response to such conditions of the horse-and-buggy age remain today in active service.

Shipments bound to or from the downtown freight houses and team tracks are generally subjected to delays in passing through the terminal district. They are loaded on cars that are switched to the nearby industrial or secondary classification yards, and there coupled to transfer trains. The transfer trains, in turn, are operated between the secondary yards and the major outer classification yards, where the cars, after additional time is consumed in the yarding, are placed in road freight trains for movement toward their destinations. In the case of less-than-carload shipments, an additional handling is necessary, because such shipments from a given siding or freight station are placed in a car or group of cars without regard for their ultimate destination, and are reloaded at "transfer houses" into cars wherein

shipments from many origins within the switching district are combined with each other, all going toward the same destination.

Each of the trunk line railways operates one or more groups of freight houses for both carload and less-than-carload freight close to the central part of Chicago. A typical group consists of a long shed for inbound freight, the "in freight house," and a similar one for outbound freight, each served by a series of parallel tracks upon which the cars are placed for loading and unloading, and by driveways for motor trucks. Access and egress to and from the facilities is free only for shipments on which the owner line receives a road-haul; traffic that enters or leaves the terminal district over the lines of another railway is assessed a switching charge. In association with the freight houses, team tracks are commonly operated for traffic that may be handled directly between freight car and motor truck without intermediate sorting and handling in the transit sheds.

Peripheral movement of freight terminals.--In recent years there has been a strong tendency for many freight houses, and particularly for transfer houses for less-than-carload freight to be located near the edge of the city, rather than close to its heart. Notable examples of such newer facilities are the huge package freight terminal and transfer house of the Chicago and North Western adjacent to the Proviso Yards,¹ and a large freight house of the Milwaukee Road at the Galewood Yard.² Shipments routed to and from such outer freight houses avoid the congested yards closer to the center of the city.³

Car loading companies, several of which operate in the metropolitan area, combine small less-than-carload shipments into

¹Proviso freight transfer house has an area of 21 acres under one roof, is 1,420 feet long and 620 feet wide. The building has a capacity of 720 cars on tracks that are served by concrete platforms. Large docks provide room for scores of motor trucks. Tractor-and-trailer trains haul freight between trucks, transit shed, and railway cars, and they transfer through less-than-carload freight from car to car.

²The Galewood freight house, opened September 30, 1940, replaced an older and smaller facility on the same site, eight miles northwest of downtown Chicago. It has two platforms each 1,800 feet long, between which are five tracks holding 42 cars each. Additional tracks alongside the platforms have a capacity of 179 cars.

³The saving in transit time that results from the use of peripheral stations and transfer houses is usually 12 to 24 hours.

carload lots, thereby relieving the railways of expensive and time-consuming collection and delivery services, and expediting the movement of cars. The companies pay the carload rates to the railways, passing on to the shippers a portion of the difference between the carload rates and the higher less-than-carload rates. The freight houses of the car loading companies, like those of the railways themselves, are generally located along the lines of railway that converge upon the central business district, as well as within some of the outlying industrial concentrations.

Union freight stations.--Union freight stations offer noteworthy examples of co-operation among the railways and of the advantages offered by terminal co-ordination in decreased operating expense as well as decreased areas required for terminal facilities. Union freight stations are large terminals, not unlike those of the individual railways except that they are generally newer and more modern. They are open to several or all line-haul carriers on equal terms. Most such facilities are operated by the belt and terminal railway companies and are located on the belt routes at points readily accessible from industrial areas. The Belt Railway of Chicago, for example, operates such facilities at Clearing and at several other localities in Chicago. The Chicago Junction Railway has a very large union freight station within the Central Manufacturing District west of the Union Stock Yards, and several others at various locations on its lines. Finally, four important union freight stations near the central business district are operated by the Chicago Tunnel Company.

The Chicago tunnel system.--Were the movement of freight to and from the warehouses, manufacturing establishments, and retail stores of Chicago's commercial core and the surrounding area handled between origin and destination on the one hand and the railway freight stations on the other by motor truck on the streets, the congestion of the heavy trucking would make rapid movement impossible and would at the same time cause serious interference with the flow of automobile, truck, and surface car traffic in and out of downtown Chicago.

The Chicago freight tunnel system, a unique facility for the handling of freight within the central business district and to and from the railway freight stations, makes possible the elimination of much of the movement over the streets and provides hundreds of business establishments with direct connections with

the railway stations. A very considerable portion of the less-than-carload freight of the central area is carried to and from the railway stations through the facilities of the Chicago Tunnel Company, which operates sixty-two miles of tunnels under practically all of the streets of the "Loop" as far south as Sixteenth Street, north to Erie Street on the Near North Side, and one-half mile west of the Chicago River to Halsted Street. Within the tunnels operates a complete system of narrow-gauge electric railways. Business establishments on the streets served by the system have provided private sidings and loading platforms in their basements for the handling of package and other freight to and from the tunnel cars. The tunnel company is a common carrier and issues through bills of lading between its lines and any point on the railways of the United States, Canada, and Mexico. The tunnel cars are loaded either within the business establishments or at the basement platforms and are picked up by electric locomotives that operate trains of from ten to fifteen cars on the two-foot gauge tracks of the system. The tunnels, originally built to carry cables for a telephone system, a project that was never carried out, are 6 feet wide and 7-1/2 feet high. Throughout most of the system they are forty feet below the level of the streets. To serve the industries and reach the railway freight stations of the near North, West and South sides, eleven crossings under the Chicago River and its branches have been constructed. The tunnel system reaches freight stations of each of the trunk line railways within a mile of the central business district by means of elevators. Direct loading and unloading is accomplished between the tunnel system and the railway cars at the freight stations. Trucking of less-than-carload freight to and from establishments having direct underground connections with the tunnel system is thus unnecessary.

The service performed by the tunnel company is somewhat analogous to that performed in the handling of less-than-carload freight by the belt line railways for the industries on their lines farther from the center of the city. The tunnel company sorts all shipments from an establishment, forwarding each to the appropriate trunk line railway freight station for movement toward its destination. Similarly, incoming freight is picked up at the terminals of the railways and delivered to the consignee's tunnel tracks. Many establishments that do not operate direct tunnel

track connections are served by the pick-up and delivery system of the tunnel company, carried on with motor trucks, between the establishments and the four union freight stations operated by the company. A valuable auxiliary service is provided for many establishments on the tunnels in the handling of coal and the removal of ashes and cinders, thereby eliminating movement of those commodities from the crowded downtown streets. By serving as the collection and delivery medium for more than six hundred thousand tons of package freight per year in the central part of Chicago, the tunnel system is an integral part of the railway system of metropolitan Chicago. Built for an entirely different purpose in the horse-and-buggy age, the tunnel system serves a real function in the motor age in compensating for the congestion that otherwise would result on the city streets from the intensive concentration of business in a very limited area of downtown Chicago.

Passenger Coach Yards

Although the average railway passenger arriving at or departing from Chicago sees only a large depot building and a train shed, those facilities would be useless without extensive shops and yards for the servicing of passenger cars and for their storage between runs. Each of the trunk line railways that enters the metropolitan area operates from two to several dozen long-distance daily passenger trains, and several of the railways engage in extensive suburban passenger operations (Fig. 4). The maintenance of the equipment that performs the passenger service requires a number of specialized facilities that form parts of the metropolitan railway pattern. Most such facilities are located in the coach yards.

General characteristics.--The areas required for the servicing of the passenger equipment, for its storage while not in use, and for the making up and breaking up of the passenger trains are very extensive. Obviously, the centrally located land in the vicinity of the major passenger terminals is far too valuable to permit the use of large areas for such purposes. As in the case of the freight yards there has been a notable trend toward decentralization of the passenger coach yards outward from the urban center. Since many operations involved in maintenance of passenger equipment are similar to those for freight equipment, several of the railways have located their coach yards in proximity

to freight yards and to other railway shops. However, as the result of the problems involved in turn-around of trains during the short time available between many of the incoming and outgoing runs, there is a rather definite limit to the distance from the downtown passenger terminals at which the coach yards of railways with heavy passenger traffic may be located. Furthermore, the expense of backing up an empty train for several miles from the depot to the yard and later backing it again from the yard to the depot is non-productive, and is minimized wherever possible. Because, with one exception, the major downtown passenger stations of the railways in Chicago are of the stub type in which the tracks dead-end, each train movement with passengers also involves an empty movement between depot and yard, in which the train is backed up.

As in the case of the freight yards, the major consideration in the localization of the passenger coach yards is a reasonable balance between the high cost of the land close to the depot or terminal and the expense of non-revenue-producing operation on the other. A secondary factor is the inertia of locations that were selected early in the development of the city when locations now close-in were then peripheral.

It is necessary to differentiate between yards and other facilities for the servicing of through inter-city long-distance trains on the one hand and those for suburban trains on the other. The servicing of the former, involving sleeping, dining and lounge cars, is much more complex, and requires more facilities and space than the daily servicing of suburban coaches. Furthermore, the time available for switching and servicing the suburban equipment is generally the full period between the morning and evening hours of peak traffic. Long-distance trains, on the other hand, particularly since the introduction of the Diesel-electric locomotive in 1934-35, often must be turned in from one to three hours.¹ Over-

¹An outstanding example of a rapid turn-around is the Burlington's Twin Cities Zephyr which arrives at the Chicago Union Station from Minneapolis at 2:40 P.M. and departs on the return trip at 3:30. In the intervening fifty minutes, the passengers, baggage, mail, and express are unloaded, the train backed over a mile to the coach yard, the coaches cleaned and inspected, the locomotive inspected and refueled, the diner stocked, the train turned around on a wye, and backed over a mile to the depot, and the passengers, mail, baggage and express loaded for the outward trip. With less rapid turn-around four trains instead of two would be required to maintain the double-daily round trip service between Chicago and the Twin Cities.

night trains are serviced during several hours of the daytime, but they require considerably more servicing than do the day trains, and for them reduction of the turn-around time is not of as great importance. Thus the nature of the trains to be handled and their schedules are important factors in the location of the passenger coach yards.

The facilities at the coach yards consist of tracks, shops, commissaries, and a multiplicity of other structures. The tracks are most commonly arranged with wide spaces between to give access to the sides of the cars for cleaning and painting. The Pullman Company operates facilities at many coach yards, including laundries, and lounging rooms for the personnel. The maintenance departments of the railways have forges, foundries, wheel shops, paint shops, upholstery shops, and a variety of other facilities for the maintenance and repair of the coaches. Finally, the round-houses and shops for the locomotives that haul the passenger trains are usually to be found in proximity to the coach yards. Obviously, many acres are required for each of the principal coach yards.

Coach yards for inter-city trains.--Coach yards for the long-distance inter-city trains are located at varying distances from the downtown passenger depots, from a few hundred feet in the case of the Illinois Central to about ten miles in the case of the Nickel Plate, though most of the yards are within five miles of the respective terminals (Table 1).

Since it is important to minimize the back-up of empty passenger trains, most of the railways have located their passenger yards relatively close to the downtown depots. Formerly the turn-around time for passenger trains was very much longer than now because of less critical schedules, and it was feasible to locate the coach yards at sites that were then at the edge of the city on land of low value and sparse settlement. As the city expanded such generally remained in railroad use but, unlike the major freight yards, the passenger coach yards could not be removed outward toward the new urban periphery. On the contrary, it became ever more desirable to move them closer to the center of the city, but, in general, it was impracticable to do so because of intensive use and high value of the close-in land.

The greater the number of trains that are handled by a railway, the more important is a centripetal location for the coach yards. The Burlington and Pennsylvania, for example, with many

TABLE 1

LOCATION OF PRINCIPAL PASSENGER COACH YARDS

Railway	Location of Coach Yard for Long-Distance Inter-City Trains	Miles from Depot	Depot
Pennsylvania	12-16th Sts., Chicago River	1	a
Burlington	12-16th Sts., Clinton St.	1	a
Alton	16th and Lincoln St., B. and O.C.T.	3	a
Milwaukee Road	Grand and Western Aves.	2	a
Baltimore and Ohio	16th and Lincoln St., B. and O.C.T.	3	b
Chi. Great Wn.	Same as B. and O.	3	b
Pere Marquette	Same as B. and O.	3	b
Soo Line	Same as B. and O.	3	b
New York Central	State and Root Sts.	4	c
Rock Island	47th St. and Wentworth Ave.	5	c
Nickel Plate	95th St. and Dorchester Ave.	10	c
Santa Fe	22d St., Chicago River	2	d
Wabash	47th St. and Wallace Ave. (C. and W.I.)	5	d
Chi. and En. Ill.	Same as Wabash	5	d
Grand Trunk Wn.	Same as Wabash	5	d
Monon	Same as Wabash	5	d
Erie	Same as Wabash	5	d
Illinois Central	16th St. and Lake front	*	e
Michigan Central	Same as Illinois Central	*	e
Big Four Route	Same as Illinois Central	*	e
C. and N. W.	Calif. Ave., and Kinzie St.	2	f

*Less than one mile.

Depots:

a. Union Station

b. Grand Central Station

c. La Salle St. Station

d. Dearborn Station

e. Central Station

f. Northwestern Depot

trains each day, operate their coach yards only a mile from their depot. The Santa Fe, another busy passenger carrier, has its facilities only slightly farther. The Nickel Plate Road, on the other hand, schedules only two daily passenger trains in each direction, allowing at least twelve hours for a turn-around. Aside from the wages and fuel expenses involved in the longer back-up, the peripheral location of the Nickel Plate coach yard, ten miles from its depot, does not seriously handicap the operation of the railway, and, in fact, results in some economies due to the location near the freight yards and locomotive shops, which makes

possible some joint use of facilities for both passenger and freight equipment.

The location of the coach servicing facilities of the railways that operate more than one route into the metropolitan area are influenced by the multiplicity of routes. For example, the Illinois Central coach yards and shops are located at the junction of the main line to the south and the line to the west, enabling equipment from both routes to be serviced without extra movement.¹ On the Chicago and North Western all long-distance passenger equipment is serviced at the California Avenue yards and shops on the Galena Division regardless of the route over which it is operated, since a back-up from the depot is involved in any case.² Because Chicago's depots with a single exception are of the stub type, no train, after unloading, proceeds in the same direction to the coach yard as do, for example, the Pennsylvania Railroad trains in New York City, where the passenger depot is of the through type. The only through depot in Chicago, the lake front terminal of the Illinois Central, also involves a back-up to the coach yards which are to the south, the same direction from which the trains enter the terminal after their runs.

Coach yards for suburban trains.--A number of coach yards and other facilities in metropolitan Chicago serve as auxiliaries to the suburban services that are operated by several of the railways. Since the inauguration of commuter trains by the Illinois Central between downtown Chicago and Hyde Park in 1856, many of

¹The Illinois Central and its tenant lines maintain their passenger equipment, except suburban coaches, at the Weldon coach yards and shops, extending from Fourteenth to Eighteenth street on the lake front. In the early 1850's the American Car Company had established facilities on the site, which were purchased by the Illinois Central in 1856 (Brownson, op. cit., p. 55). Since that date the major repairs on passenger rolling stock have been made in the shops, and the cars are placed in the nearby yards between runs. Those facilities, shared by the Illinois Central and the Michigan Central, are the most conveniently located of all passenger coach facilities in Chicago with relation to the depot. A run of only a few hundred feet is necessary to transfer cars between the yard and Central Station at Twelfth Street.

²The California Avenue coach yards and shops of the Chicago and North Western are located two miles west of that railway's passenger terminal. The facilities service all main-line trains in long-distance passenger service, as well as suburban coaches that operate on the Galena Division. The yard consists of 33 acres with 41 tracks having a capacity of 575 cars, of which 293 are normally handled daily.

the railways have operated trains on schedules and over routes intended primarily for commuters between the city, outlying neighborhoods on the periphery of Chicago, and suburban communities. Some of the services have continued to the present time to be important factors in the growth and expansion of the metropolis; some have been discontinued. At present suburban service is operated relatively frequently by five steam railways over nine routes,¹ by another trunk line as an electrified service more or less independent of the other operations of that line, and by three important suburban or interurban electric railways (Fig. 4). Although in some cases it is impossible to distinguish between purely suburban service and the other passenger service of the railways, on most of the lines the suburban trains consist of coaches and locomotives set aside exclusively for such operations, and on one line separate tracks are reserved for the suburban trains. Figure 4, by the width of the respective bands, shows the relative number of trains operating over each railway line having passenger service in the metropolitan area. It will be noted that, as the City of Chicago is approached the train service increases. On some of the railways that handle a large volume of suburban passenger traffic, the suburban trains greatly outnumber the long-distance inter-city trains. On most lines the suburban trains originate and terminate at various points from seven to about forty miles from the heart of Chicago. For example, on the Milwaukee Division of the Chicago and North Western trains operate to and from Evanston, Highland Park, and Waukegan, originating and terminating at all of those points. Similarly on the Rock Island some suburban trains operate between Chicago and Blue Island, and others as far as Joliet.

At each of the outer terminals of suburban service facilities are located for the handling of suburban trains. Those facilities vary from a simple sidetrack on which trains are placed between runs, to well equipped coach yards and engine terminals where the complete series of operations necessary for the maintenance of the equipment is performed. In a few cases, such as the

¹Each of those railways has a daily suburban service of at least five trains in each direction. In addition several other railways, including the Chicago and Western Indiana, Pennsylvania, New York Central, and Wabash, offer suburban service less frequently.

Burlington shops in Aurora, the facilities for the handling of the suburban equipment are combined with those for the maintenance and repair of other rolling stock and motive power. In most instances, however, the facilities at the outer suburban terminals include only those necessary for the turning-around of the trains and for minor servicing at the end of their runs, the major repairs being made in Chicago or at the large shops on other parts of the railway systems.

The principal suburban services are provided by the Illinois Central electric lines, the Chicago and North Western, the Milwaukee Road, the Rock Island, and the Burlington, the four latter operating steam trains, and by the Chicago, North Shore and Milwaukee, the Chicago, South Shore and South Bend, and the Chicago, Aurora and Elgin electric railways.

The Illinois Central suburban services are unique in Chicago with respect to their extremely high traffic density, frequency of trains, and speed of operation. It is the only electrified operation of a steam railway in metropolitan Chicago. Required to electrify by the Lake Front Ordinance of 1919, the Illinois Central, upon inauguration of the new service in 1926, found that its local passenger traffic, already the largest of any Chicago steam railway, greatly increased.¹ The high traffic density is explained by the location of the line along the lake shore where some of Chicago's most densely populated residential areas are located, by the early inauguration of the original steam service which encouraged expansion of the city in the direction of the railway route,² and by the speed and frequency of the

¹The number of suburban passengers on the Illinois Central increased from 19 million in 1920 to 35 million in 1930.

²The Illinois Central was the first Chicago railway to inaugurate suburban service. In securing its right-of-way it purchased, seven miles south of downtown Chicago, 60 acres of land from Paul Cornell, who owned 300 acres, on condition that daily trains would be operated between Chicago and Cornell's property. Cornell agreed to pay any deficit that should arise in maintaining the service. The first train was operated between Chicago and Cornell's property, the village of Hyde Park, on July 21, 1856, terminating at what is now Fifty-third Street. It resulted in a real estate boom. In 1862 service was extended south to Sixty-third Street, and by 1873 Hyde Park's 3,000 inhabitants were served by a dozen daily trains (Chamberlin, Chicago and Its Suburbs [Chicago: T. A. Hungerford and Co., 1874], p. 353). In that year there were twenty daily trains as far south as Seventy-first Street. The Fair of 1893 caused a great expansion of the

trains.¹ Three routes are operated: on the Illinois Central's main line southward from Chicago to the communities of Hyde Park, Woodlawn, Chatham, and Pullman within the city limits, and the residential suburbs of Riverdale, Harvey, Flossmoor and others beyond the city limits; on a branch line serving the South Shore residential district of Chicago and the northern end of the Calumet industrial district at South Chicago;² and on another branch connecting residential and industrial West Pullman and Blue Island with the main line and with downtown Chicago.³ Each of the electrified lines has very frequent service. The two branches are on the surface of the ground, with numerous grade crossings and closely-spaced stations; the main line is elevated, and with numerous tracks permitting the overtaking and passing of several trains in the same direction. The main line tracks used by suburban trains are shared with no other railway traffic except the suburban electric trains of the South Shore Line.⁴ There is no conflict between suburban and other train movements. Between Twelfth Street and Fifty-third Street the suburban service is allotted 6 tracks of the 10-track railway route; farther south it uses 4 tracks, decreasing to 2 tracks beyond Kensington, where the traffic density is considerably less than farther north.

In the character of the service, the speed and headway

traffic, some of which was retained permanently as Chicago's South Side was built up with apartments. By 1900 about 218 trains were operated each week-day. For a brief history of the service see "Suburban Service for 70 Years" (Illinois Central Magazine, XV [1926], 3-8).

¹Between Randolph and Fifty-third street there are about 390 daily trains, on ten-minute headway during most of the day.

²The South Chicago branch was opened for suburban service in 1883.

³The Blue Island branch was completed in 1892.

⁴The Chicago, South Shore and South Bend Railroad (South Shore Line) is primarily a carrier of carload freight but it also operates an electrified passenger service connecting Chicago with Hammond, Gary, Michigan City and South Bend, Indiana, a distance of 100 miles. It was opened from South Bend to Pullman in 1908. At the latter point through passengers to or from Chicago transferred to Illinois Central trains. In 1912 South Shore cars operated into Randolph Street behind Illinois Central steam locomotives from Kensington. In 1926 after electrification of the Illinois Central suburban service, South Shore trains commenced operation to and from Randolph Street under their own power.

of the trains, and the type of multiple-unit electric cars that are used, the Illinois Central service resembles that of an urban rapid transit railway rather than that of a suburban line. By far the greatest proportion of the traffic is between points within the City of Chicago. The average distance travelled by each passenger is only 9.6 miles, and the busiest stations, other than those in downtown Chicago, are Hyde Park and Woodlawn, only six and seven miles, respectively, from the commercial center of Chicago.¹ In 1937, a typical year, suburban trains accounted for 89.5 per cent of the passengers and 29.1 per cent of the passenger revenue of the entire Illinois Central 5,000 mile system.² The suburban trains serve some of the most densely populated areas on the South Side of Chicago. Rapid growth of the South Shore district, with construction of numerous large apartment buildings, followed the electrification of the Illinois Central, particularly of its South Chicago branch.

The locations of the various facilities along the Illinois Central's electrified suburban lines follow a somewhat different pattern from that of the facilities on the steam railways having suburban service. Rapid acceleration and deceleration of the electric trains permit the stations to be spaced closer than are those on any steam railway, without sacrifice of over-all running time of the trains. Furthermore, because the unit cost of electrified train operation is less than that for comparable steam trains, and because the trains can be operated equally well in either direction without turning of the equipment at the terminals, the outer terminals of the Illinois Central's electrified lines do not have facilities for the servicing of trains, which is done at the shops along the lake front just south of Twelfth Street and at the Burnside Shops at Ninety-fifth Street, where the heavy repairs are made.

The steam railway suburban services to the southwest, west, northwest, and north of Chicago are of vital importance in the residential development of the metropolitan area.³ They vary

¹Illinois Central Suburban Service, Report to Employees on 1940 Operations (Chicago: Illinois Central Railroad Co., 1941).

²Organization and Traffic of the Illinois Central System, p. 307.

³In some cases the suburban service of the railways preceded the settlement of the outlying parts of Chicago and of the

greatly in frequency of train operation and in their effects upon the areas through which they pass. A characteristic feature of the metropolitan pattern is the stellate or lobate outline of the outer edge of the built-up urban area. Long appendages of urban land use extend far into the surrounding country along a number of the railway lines that operate suburban passenger trains.¹

The principal railways having steam suburban service are the Chicago and North Western over its Milwaukee, Wisconsin, and Galena divisions, the Milwaukee Road to the north and west of Chicago over two routes, the Burlington, and the Rock Island.

The coach yards for the cars used in suburban trains as well as the engine terminals for the locomotives that haul the trains are, in several instances, located closer to the downtown depots than are the facilities that service the other passenger equipment. That is made necessary by the rapid turn-arounds and shorter runs called for by some of the suburban schedules. Obviously, a train making a thousand mile round trip can more economically, relative to its revenue-producing capacity, make a five mile turn-around run than can a suburban train that makes a round trip of only twenty or thirty miles.

The Milwaukee Road's suburban coaches are serviced at that railway's Western Avenue shops and yards along with the through long-distance cars; and the suburban coaches of the Burlington are handled at the general coach yards of that company near the Union

suburban communities that they serve; in other cases it followed. The original Galena and Chicago Union Railroad, as early as 1848, offered essentially a suburban service. In 1856 the Illinois Central inaugurated its suburban trains to Hyde Park, and in the same year both the Chicago and Milwaukee and the Illinois and Wisconsin lines (the Milwaukee and Wisconsin divisions, respectively, of the Chicago and North Western) began suburban operations, the former to Waukegan and the latter to Cary, on the Fox River. The completion of the Burlington's line to Chicago in 1864 was accompanied by the beginning of suburban operation to Downer's Grove, Naperville, and Aurora. The appendages of suburban growth filled in rapidly along those routes. A suburban boom followed the plating of numerous towns and villages in 1869, and the peripheral movement of population after the Chicago Fire of 1871 was greatly facilitated by the suburban service of the railways, which was expanded to accommodate the increased traffic.

For descriptions of the principal suburbs during the period just after the fire, see Chamberlin (op. cit.).

¹Klove (op. cit.) describes the urban expansion along a typical suburban appendage.

Station. The Rock Island, however, operates a separate suburban coach yard near Eighteenth Street and the Chicago River, closer to its terminal, the La Salle Street Station, than are the facilities used to service its other passenger equipment. Finally, the Chicago and North Western handles its suburban cars in two separate Chicago yards, the Galena Division cars being serviced at the California Avenue facilities, and the coaches and locomotives of suburban trains on the Milwaukee and Wisconsin divisions being handled at Erie Street and the north branch of the Chicago River, less than a mile from the downtown passenger depot.

The three suburban and interurban electric railways have had but little effect upon the pattern of metropolitan railway facilities, but have been of considerable significance in encouraging the intensification of suburban growth, previously begun with steam railway service, in the areas that they serve. The three systems were entirely built up since the turn of the century, when the suburban movement was in full swing but before the automobile made its influence strongly felt. Originally intended as local trolley lines, each of the three systems finally developed into well-constructed high-speed railways with both passenger and freight service.¹

¹The Chicago, North Shore and Milwaukee Railroad (North Shore Line) operates through inter-city service between Chicago and Kenosha, Racine, and Milwaukee, Wisconsin for passengers, carload freight, and loaded motor truck trailers, as well as suburban service on both its shore line and Skokie Valley routes between Chicago and the suburbs north to Waukegan. The line began as a short street railway in 1894, and was completed for through operation between Milwaukee and Evanston in 1908. Entrance to Chicago was later secured over the tracks of the elevated rapid transit railway. The Skokie Valley line was opened in 1926 to effect a separation of the local suburban from the through traffic. The principal shops of the system are at Highwood, Illinois, although trains are also stored and serviced at two of the Chicago shops of the elevated railway system.

The Chicago, Aurora and Elgin Railroad also uses the elevated railway tracks to effect a Chicago entrance, from the west. Its main line is a double-track route between Chicago and Wheaton, where two branches diverge, one to Aurora and the other to Elgin. An additional branch serves Geneva. A branch to St. Charles was abandoned and replaced by a bus connection. Unlike the other two suburban electric railways, freight traffic on the Chicago, Aurora, and Elgin is relatively unimportant. Principal shops of the system are at Wheaton.

The principal revenue of the Chicago, South Shore and South Bend Railroad (South Shore Line) is from freight, but the suburban passenger service between the Calumet-Gary area and Chi-

The flexibility of electric train operation has enabled the electric lines to furnish a more frequent service than that of the steam railways, particularly during the "off-peak" periods of the day, since they can operate single cars profitably when steam railways would find it uneconomical to run trains. Furthermore, the electric trains can make more stops at closer intervals than can steam trains, thereby permitting closer placement of stations. The result has been an intensification of the suburban residential development in the areas served by the three electric railway systems and a filling in of the gaps between the nuclei of settlement that had previously developed in the vicinities of the steam railway stations.

Roundhouses, Shops, and Associated Facilities

Important components of the economic base of practically every railway center, the shops, roundhouses, and associated facilities not only are significant as centers of employment but also as important and strategic uses of the land. The localization of those facilities is of great significance in relation to the pattern of land use and population distribution of the entire metropolitan area. In the shops and roundhouses, no less than in the great classification yards and terminals, many thousands of persons earn their livelihoods. Furthermore, the facilities have the general character of heavy industries, and, like most other heavy industries, exercise a detrimental influence upon other than industrial uses of the land in their vicinities.

Roundhouses.--Roundhouses, where locomotives are stored and subjected to minor repairs, together with the associated forges, foundries and other accessory facilities including those for fueling the motive power, are usually found in proximity to each other and to the yards where cars are assembled into trains. The pattern of distribution of roundhouses, therefore, closely resembles the pattern of the major freight and passenger yards.

Shops.--Railway shops may be divided into two general types, first, major shops in which equipment of entire railway systems or large segments thereof are overhauled, repaired, and

cago is very important. The main shops of the line are at Michigan City, Indiana, sixty miles from Chicago, and outside of the metropolitan area.

rebuilt, and second, smaller shops where light running repairs, ordinary overhauls, and routine maintenance of equipment operating to and from or within the terminal district are carried out. Metropolitan Chicago is noteworthy for the large number of the latter type of facilities, and almost equally for the very small number of the larger type of shops in proportion to the number, size, and importance of its railway lines.

Maintenance shops, other than the large major shops, are located in close association with yards and other facilities where trains are handled. Each of the larger freight classification yards, for example, has, as a part of its layout, a number of "bad order" tracks upon which cars needing repairs are placed. The cars are taken from those tracks to the shops, usually conveniently located nearby, where minor repairs are made. In association with each passenger coach yard, likewise, is a series of shops where ordinary repair and maintenance operations are performed. Running repairs of locomotives are most commonly made at shops located within the roundhouse and engine terminal areas. Thus the pattern of ordinary maintenance shops closely resembles that of the yards and terminals.

The large major railway shops, on the other hand, are conspicuous by their relative absence from metropolitan Chicago. Of the twenty-one trunk line railway companies that serve the area, only two operate their principal shops within it.

The explanation for the absence of major shops lies in the fact that the railways terminate in, rather than pass through, the metropolitan area. The shop facilities, particularly those of the large railway systems that extend for hundreds of miles, tend to be located toward the middle, rather than at the ends, of the railways, because motive power and rolling stock can be moved to such intermediate locations from any part of the respective systems with a minimum of mileage. Most railways, rather than operating a number of shops for major repairs of equipment each serving a segment of the system, prefer to centralize such operations at one, or at a very limited number, of very large plants, thereby receiving the benefits of economies that result from large-scale mass-production assembly line methods.

Such large shops are, in general, located at or near the "center of gravity" of their respective railway systems, where the balance is reached between the distances to the extremities of the

system on the one hand and the relative traffic density in both directions on the other. In cases where one end of a large system has a much greater traffic density and hence more rolling stock and motive power than the other end, the shops tend to be located near, but not at, the heavy end. Thus the Pennsylvania Railroad, for example, centralizes all of its major repairs and rebuilding of both motive power and rolling stock at Altoona, Pennsylvania, in a tremendous plant that completely dominates the economic life of the city. Altoona is located somewhat east of the central point of the system, Pittsburgh, because the traffic density on the eastern half of the system, and consequently the amount of equipment, is greater than on the western half. Similarly the Baltimore and Ohio performs most of its major operations on its equipment at the Mont Clare shops in Baltimore. The great western railway systems, too, have located their shops in similar relationships to the areal and traffic patterns of their respective lines. The Santa Fe, for example, has its principal shops at Topeka, Kansas, east of the center of the system because traffic is heaviest on the eastern half. The Santa Fe, however, unlike most railways, has to some extent decentralized some of the major operations into six large shops, located between San Bernardino, California, and Fort Madison, Iowa, the latter point having the nearest major Santa Fe shop to Chicago. The Milwaukee Road shops are located at Milwaukee, eighty-five miles north of Chicago, a principal concentration point for train movements on that system.

That the tendency of shops of long attenuated railway systems to be located at a point toward the middle, rather than near a terminal, is operative is illustrated by the movement of the principal shops of the Illinois Central system, long located at Burnside within the City of Chicago at Ninety-fifth Street, to Paducah, Kentucky. The latter city is an important junction point nearly midway between the two ends of the system's main line, which extends from Chicago to New Orleans. The Burnside shops, once a very important center of railway activity and employment in Chicago, are now used only for the maintenance of the suburban electric cars, Diesel switch engines, and other equipment that is used locally within the Chicago metropolitan area.

The shops of smaller railway systems, too, tend to be located midway between the terminal cities rather than at one end

of the system, important though the terminal cities may be as sources of labor and materials. The shops of the Wabash Railway, for example, are at Decatur, Illinois, nearly midway between Chicago and St. Louis on the one hand and Kansas City and Detroit on the other. The Chicago and Eastern Illinois shops, similarly, are at Danville, Illinois, near the center of that system but somewhat closer to the northern end, which carries the heavier traffic, than to the southern end. For the same reason the shops of the Alton Railroad are at Bloomington, Illinois, a hundred miles southwest of Chicago.

The shops of two very important railway systems, however, the Burlington and the Chicago and North Western, are located within metropolitan Chicago. The former are at Aurora, near the western edge of the metropolitan area on the Fox River thirty-eight miles west of Chicago, and the latter are within the City of Chicago only three miles west of that railway's downtown passenger terminal.

The Burlington's shops in Aurora, one of the principal sources of economic support for that satellite city, are the main concentration of facilities for the repair and rebuilding of the equipment of the entire Burlington system, which extends from Chicago to the Twin Cities, westward to the Rocky Mountains, and south to Texas. Those shops, which normally employ more than 1,800 persons and occupy an area of 70 acres, were established in Aurora as early as 1856.¹ At that time Aurora occupied a position in relation to the Burlington system somewhat analogous to the position that Altoona now occupies on the Pennsylvania Railroad, or Topeka on the Santa Fe. It was at neither terminal, but closer to the end of the system that handled the heavier traffic. In 1856 the Burlington extended westward only as far as the Mississippi River. Undoubtedly the inertia resulting from the substantial capital investments in the facilities has been responsible for the retention of the shops at Aurora rather than their removal farther toward the west where they would be more accessible from all parts of the railway system.

The shops of the Chicago and North Western Railway on Chi-

¹Carl Frederick Carlson, *Aurora, Illinois, A Study in Sequent Land Use* (Ph.D. dissertation, Department of Geography, The University of Chicago [Private Edition, Distributed by the University of Chicago Libraries, 1940]), p. 23.

cago's West Side, like those of the Burlington, were established when the railway system was small, and have been retained in their present location during the period when the system expanded to many times the size that it was when the facilities were established. The Keeler Avenue shops, six miles west of downtown Chicago, handle the major repairs for the locomotives and freight cars of the entire Chicago and North Western system: passenger cars are repaired at the California Avenue shops in connection with the coach yards a mile to the east. The Keeler Avenue facilities are the largest active railway shops in the City of Chicago. Together with the adjacent freight yard, a minor classification facility, they occupy nearly a square mile of land, extending from Pulaski Road (Crawford Avenue) westward to the middle belt route. At the time of the construction of the shops they were outside of the city.¹

The convergence of several of the principal routes of the Chicago and North Western at Chicago makes the shops accessible from many parts of the system. Unlike many railway systems, the North Western system is not composed of a single line with its branches; it is a complex network with the heaviest concentration of lines in the vicinity of Chicago where three of the principal routes of the system converge. With such a pattern, the location of the principal shops at Chicago seems logical.

The belt lines that operate entirely in metropolitan Chicago maintain several large shops, principally near their major freight yards. Noteworthy among the belt line shops are the large Joliet shops of the Elgin, Joliet and Eastern Railway.

Important though the major railway shops of metropolitan Chicago may be to the railways that operate them, the passenger terminals, and not the shops, may be regarded as the nuclei or focal points of the metropolitan rail pattern, and it is with them that the next chapter is concerned.

¹The original shops on the site were completed in 1874 (Chamberlin, op. cit., p. 422).

CHAPTER VI

PASSENGER TERMINALS

The passenger terminals constitute the cores of the metropolitan railway pattern. They are the points to which all of the radial trunk lines are directed, and their locations have had a vital effect in stabilizing the location of the city's commercial center.¹

Nature of the Facilities

Six major depots located in the central business district handle the great volume of the railway passenger traffic, relieved only slightly by a number of outlying stations on several of the railway lines. To the downtown terminals lead the seven major avenues of approach formed by the convergence of the radial railway routes. Associated with the depots is a huge agglomeration of subsidiary facilities, including the yards through which the trains are switched in entering and leaving the station tracks, the baggage and express houses, and the mail-handling facilities (Fig. 6). Beyond that multitude of facilities for the handling of passenger trains and passenger train cars are many of the principal freight houses which required central locations in the horse-and-buggy age and which now suffer from impaired efficiency as the result of traffic congestion on the nearby streets, only partially relieved by the tunnel system.

The passenger terminals and their associated facilities form a band of steel around the commercial core of Chicago, and have created barriers that limit the expansion of the urban center. That condition constitutes a large part of the explanation of the unduly high concentration of intensive land uses and high

¹The passenger terminals have been described in great detail in the numerous reports on terminal consolidation reviewed in Chapter VII. This chapter, therefore, is brief, but its brevity bears no relation to the importance of the facilities in the pattern and operation of the railways as well as in the development of the city.

land values in a very small area of central Chicago, a problem of acute importance to all who are concerned with the orderly development and functioning of the city. The band of railways surrounding the narrow peninsula formed by the south branch of the Chicago River on the west, the main stem of the river on the north, and Lake Michigan on the east (Fig. 6) came into being during the first decade of railway development in Chicago. It has been strengthened and intensified by each additional railway that added its facilities and traffic to the confused mixture of railway facilities, some modern and efficient, others old and outgrown.

The early commercial center of Chicago, along the axis of Lake Street parallel to and one block south of the Chicago River, was the locus that attracted the earliest passenger depots. Lake Street was the major retail and commercial street of Chicago until 1869, when the axis of trade shifted to State Street.¹ During the early period of railway development, when the major features of the downtown terminal pattern were in process of formation, each line sought to locate its terminal as close as possible to Lake Street. Even the lines that approached from the south, in order to be as near the business center as possible, pushed their tracks far up the narrow peninsula, thereby occupying the narrow neck of land between river and lake just south of the present business district. That use of the area has, ever since, by interposing a barrier between the business district and the territory to the south, constituted a major problem of the city planners.

Location of the Passenger Terminals

The present locations of the passenger terminals emphasize the ring of steel that confines downtown Chicago.

On the north side of the business district the original eastward extension of Chicago's first railway, at first a passenger and freight line, is now a very important industrial switching route, serving important loft buildings and factories on the north

¹Homer Hoyt, One Hundred Years of Land Values in Chicago (Chicago: The University of Chicago Press, 1933), p. 90.

Earl Shepherd Johnson, "The Natural History of the Central Business District with Particular Reference to Chicago" (Unpublished Ph.D. dissertation, Department of Sociology, The University of Chicago, 1941), pp. 122 ff.

bank of the river, as well as a number of rail-water terminals including the huge Navy Pier.¹ Until the construction of the Michigan Avenue Bridge in 1920, which was built partially on air rights over the railway, no important commercial development had taken place on the Near North Side. Later, in 1930, the massive Merchandise Mart, largest commercial building in the world, could be located on a sufficiently large site near the business district only by occupying air rights over the former yards that had served the old passenger depot on the north bank of the river.²

On the west side, the large passenger terminal of the Chicago and North Western Railway at Madison Street one block west of the river,³ together with the long station tracks on an elevated embankment, constitutes a wall-like barrier against the westward expansion of the commercial district. Between the wall and the river to the east are large merchantile buildings; west of it are dilapidated business and residential structures that constitute a portion of Chicago's blighted area.

Three blocks to the south of the Northwestern depot, on the river bank, is the newest and largest of the passenger terminals, the monumental Union Station, which in 1925 replaced an older depot on a nearby site. It serves the Pennsylvania, Burling-

¹The line was a part of the Galena and Chicago Union. The original terminal was at Kinzie Street on the west bank of the river's North Branch. In 1853 the line was extended eastward on a pontoon bridge across the river, and a passenger depot built at Wells Street. That depot, with additions, remained until the fire of 1871 after which it was replaced by a temporary structure and, in 1882, by a more permanent building that remained until completion of the present Northwestern depot in 1911. The line was early extended farther east to permit the handling of freight to and from lake vessels and the warehouses along the river. The line is still an important freight terminal line.

For a more detailed history of the mile-long line east of the river's North Branch see: Galena and Chicago Union Railroad Company Annual Reports of 1852-55, Chicago and North Western Railway Company (*Yesterday and Today*), Andreas (op. cit.), and F. W. Hillman ("History of the Chicago and North Western Railway's Chicago Passenger Terminal and Its Predecessors," *Railway and Locomotive Historical Society Bulletin No. 44* [Boston, 1937], pp. 83-87).

²The Chicago and North Western now operates a large less-than-carload package freight terminal underneath the Merchandise Mart, which is also served by the Chicago tunnel system.

³The Chicago passenger terminal of the Chicago and North Western Railway is described in great detail in the *Journal of the Western Society of Engineers* (XVI [1911], 933-1140).

ton, and Alton railways which approach it from the south and the Milwaukee Road, the tracks of which enter the station from the north.¹ The tracks of the latter road are close to the river bank and have long been a barrier to expansion of the central business district in a westerly direction. A noteworthy air rights development, the skyscraper building of the Chicago Daily News, occupies a city block over them.

South of the central business district, between the lake and the river across the neck of the peninsula as well as west of the river the land has been occupied by railways since the first line entered the metropolitan area from its south end in 1852. The railway yards, tracks, and freight and passenger terminals occupy an area on both sides of the river more than a mile in width and well over a mile long. They constitute one of the greatest compact agglomerations of railway facilities to be found anywhere in the world. The tracks leading into the Union Station, and the coach yards and freight stations of the three railways that enter the depot from the south occupy hundreds of acres along the west bank of the Chicago River from the depot as far south as Eighteenth Street. East of the river are the vast facilities of the railways that enter three other passenger depots, each at the south end of the "Loop" district. The three depots, namely, the Grand Central Station which serves the Baltimore and Ohio, Soo Line, Pere Marquette and Chicago Great Western,² the La Salle Street Station which furnishes accommodations to the New York Central, the Rock Island and the Nickel Plate roads,³ and the Dearborn Station which

¹For a detailed description of the Union Station see Chapter VII of this dissertation, and Joshua D'Esposito ("The Chicago Union Station," Journal of the Western Society of Engineers, XXX [1925], 447-61). For its history see A. B. Olson ("Chicago Union Station Company," Railway and Locomotive Historical Society Bulletin No. 49 [Boston, 1939], pp. 101-104).

²For a history of the routes leading to Grand Central Station see Hungerford (op. cit.) and Martin (op. cit.). A brief history of the terminal itself is that of Armstrong Chinn ("Grand Central Station," Railway and Locomotive Historical Society Bulletin No. 46 [Boston, 1938], pp. 53-55). Grand Central Station was constructed by the Chicago and Northern Pacific in 1890 as a terminal for the Wisconsin Central, and it later became the property of the Baltimore and Ohio Chicago Terminal Railroad.

³The present La Salle Street Station stands on a site that was in use as a railway terminal since the early 1850's. The original terminal of the Michigan Southern and Northern Indiana (now the New York Central) and the Rock Island was located at Twenty-

serves the Santa Fe, Wabash, Chicago and Eastern Illinois, Erie, Monon, Grand Trunk Western, and the suburban trains of the Chicago and Western Indiana,¹ are located between Van Buren and Polk streets on the south edge of the commercial core. They are all relatively small, and they lack some of the modern devices for the handling of trains and passengers. They are rather old, having been built in 1890, 1903, and 1885, respectively. Along the rights-of-way leading to the terminals, which, like the others in Chicago are of the stub type, is a vast assemblage of team tracks, sheds for inbound and outbound freight, mail and express houses, and numerous sidings, extending southward from the depots for more than a mile, and from the Chicago River eastward several hundred yards to State Street.

The eastern side of the business district, and the territory to the southeast of it, is occupied by the right-of-way of the Illinois Central Railroad. South of Monroe Street, which bisects the "Loop," the tracks leading into the South Water Street freight yards and stations, and into the northern terminal of the suburban line at Randolph Street, occupy a wide open cut.² There

second Street, the southern city limit in 1852. It was a temporary wood shack used while the line was under construction farther north. When the tracks reached Twelfth Street another temporary terminal was used there until the line was finally completed to Jackson Street, a block north of the present terminal. A temporary station was erected on the north side of Van Buren Street, as were switch and terminal tracks and an express building. Trains frequently blocked Van Buren Street until the first permanent structure was built, shortly thereafter, at the site of the present terminal. The latter was a brick and frame structure that remained until 1866, when a larger building was constructed, only to be destroyed by the fire of 1871. The present depot building was completed in 1903 (Frank J. Nevins, "The La Salle Street Station, Chicago, Illinois," Railway and Locomotive Historical Society Bulletin No. 50 [Boston, 1939], pp. 84-87).

By the temporary northward extension of the tracks an important feature of Chicago's central business district was made possible. The site between Van Buren and Jackson streets caused La Salle Street to dead-end at Jackson. When the temporary depot was removed the site became available for the Chicago Board of Trade, whose present building in the dominant position at the head of La Salle Street forms an outstanding architectural feature of Chicago.

¹The Dearborn Station is the first and only terminal building to occupy its site. It was completed in 1885 and is the oldest of Chicago's six major passenger terminals.

²For forty years, between 1852 and 1892 the passenger terminals of the Illinois Central and its tenants were located north

ordinances prevent the erection of permanent structures on the right-of-way, in order to preserve the attractiveness of Grant Park and the lake front. North of Monroe Street, however, the tracks fan out, and north of Randolph Street is a large area of freight stations, tracks, and yards, constituting the South Water Street group of terminals, used by the Illinois Central and its tenants. There, too, is the suburban station of the Illinois Central, the only downtown terminal exclusively for suburban trains.¹

Thus on all sides the central business district is bounded by railway facilities.

of Randolph Street. They handled both long distance and suburban trains. In 1892 the long distance trains first used the present Central Station, a mile south of the central business district at Twelfth Street (Roosevelt Road) and Michigan Avenue. That depot was constructed in anticipation of the tremendous traffic that was expected in connection with the Columbian Exposition.

For a brief history of the Illinois Central's passenger stations see: "Our 70 Years on the Chicago Lake Front" (Illinois Central Magazine, X [1922], 5-24), and Charles H. Mottier ("History of Illinois Central Passenger Stations on the Chicago Lake Front," Railway and Locomotive Historical Society Bulletin No. 43 [Boston, 1937], pp. 69-76).

¹The station platforms, three blocks in length, serve five tracks that handle as many as seventy trains during the evening "rush hour." The station is described by D. J. Brumley ("Some Phases of the Illinois Central Railroad Company's Lake Front Improvements and Electrification," Journal of the Western Society of Engineers, XXX [1925], 329-45) and "A Suburban Passenger Terminal in a Congested Location" (Railway Age, XCIII [October 29, 1932], 605-609).

CHAPTER VII

RAILWAY FACILITIES AND THE PLANNING OF THE CITY

The vast and complex pattern of railway facilities that has been described in the preceding chapters offers a challenge to the city planners and to all who are interested in a more functional and liveable metropolitan area.

For nearly half a century the consolidation and co-ordination of the railway terminals in the central part of Chicago has been prominent among local public issues. The literature on the subject is enormous, and scores of plans for new terminals have been published, but little has actually been accomplished. The railways have considerable investments in existing facilities and in real estate of very high value close to the central business district which they, naturally, are unwilling to give up.

The present terminals were developed as the result of the competition of the railway companies to secure the most favorable routes into Chicago and the best and most centrally located terminal sites. The roads that entered the city first took the best sites; those that arrived later were forced to accept less favorable locations, or to utilize jointly with earlier railways the routes and terminals already developed. Thus a considerable degree of co-ordination was developed among the railways without the intervention of public regulatory agencies.

Development of Terminal Consolidation Plans

Co-ordination and consolidation of the railway terminals is not an isolated problem; it is intimately related to the pattern and the functioning of the entire railway network of metropolitan Chicago, and, beyond that, to the entire urban pattern. Changing techniques of transportation as well as the evolution of the patterns of industrial, commercial, and residential land use must be considered in relation to any proposed plan for the rearrangement of the railway terminal facilities.

Need for passenger terminal consolidation.--The essence of the need for terminal consolidation plans is in the confused

and disorderly arrangement of the land uses and the congestion of traffic both on the railways and on the streets in the central business district, and in the industrial district on its fringe. That, in turn, is largely the result of the pattern of railway routes that developed during the period between the first railway in Chicago, in 1848, and the completion of the Dearborn Station in 1885. The latter event marked the opening of the last and newest entirely new route into the central part of Chicago.

As has been pointed out, each of the first railways that reached Chicago sought to operate its own routes into the heart of the city, because then the industrial as well as the commercial activities were concentrated in and near what is now the central business district. Furthermore, the transshipment of freight and the transfer of passengers between rail and water carriers was of vital importance to early Chicago, and each railway sought to construct railway terminal facilities along the Chicago River and its branches as close as possible to the lake. There the lake and canal vessels docked, and there the transfer of goods and passengers could take place. Only in a few cases, such as those of the Rock Island-Michigan Southern and the Illinois Central-Michigan Central, did two or more of the early railways establish joint rights-of-way into central Chicago. Such instances were the result of either a mutual financial control on the part of the participating railways, or the desire of an eastern and a western railway to establish a connection for direct interchange of through traffic at a point outside of the central part of Chicago. In either case, the citizens of early Chicago viewed the arrangements with suspicion, and several attempts, sometimes involving the use of physical violence, were made to discourage such routes. It was feared that the establishment of traffic routes that by-passed the city would cause the development of competing railway centers.

The decentralization of the city's functions, with the sole exception of the administrative and possibly the wholesale functions, took place after the railway pattern had been established with the concentration of routes at the urban core. The through passenger routes still all converge in the central part of Chicago, and a considerable volume of freight is still handled to and from the downtown freight houses, many of which have functioned at or near their present sites since the earliest days of Chicago's railways. With the completion of the last route into

central Chicago in 1885, however, the period of centralization was brought to a close.

The next period in the development of metropolitan Chicago's railway pattern reached its peak by 1890 with the completion of the major belt lines. The heavy industries, which were responsible for most of the carload freight, quickly took advantage of the opportunities that the belt lines afforded for the development of new sites on the urban periphery. Those lines provided more rapid shipment and delivery as the result of reduced switching time. They also resulted in complete neutrality of switching arrangements. That gave industries with belt line locations freedom of choice of trunk line routes to and from competitive points. The Calumet district, the satellite cities such as Harvey, Chicago Heights, Cicero, and La Grange, as well as other peripheral industrial areas, experienced rapid development, which culminated in the phenomenal growth of Clearing and the new belt of huge new war industries on the outer margins of Chicago. Thus a significant portion of Chicago's freight was eliminated from movement to and through the congested central part of the city. Passenger traffic, however, and a large proportion of the less-than-carload package freight, continues to reach the terminals within a mile or two of the Loop.

A third period in the development of the railway pattern began after the turn of the century, and gathered momentum with the increased use of the automobile and motor truck. Greater mobility and flexibility in the handling of passengers and less-than-carload freight resulted from the new form of transportation. The new conditions were met by the outward movement of some freight houses and transfer stations, and by the establishment of union freight stations near some of the major outlying industrial concentrations.

Inertia has been an important factor in the continuation of a railway pattern that developed in response to the needs of a city vastly different from the metropolitan Chicago of today. The railway rights-of-way that converged near the central business district became intricately interwoven into the financial structures of scores of railway companies, some of which are separate entities now, and others of which exist in law but not in physical fact.

In spite of the fact that the multiplicity of passenger

and freight terminals in the central part of Chicago, and the numerous duplicating and overlapping trunk and belt lines in the metropolitan area resulted in decreased speed and efficiency as well as in needless use of large areas of land that could, perhaps, better be utilized for other purposes, the focus of public attention has been upon the central part of the city. It has been felt by many persons that if the terminal problems of the central area can be solved, the entire metropolitan railway pattern can be adjusted accordingly into a more rational and functionally more efficient pattern.

Early terminal consolidation plans.--Scores of plans for the more orderly arrangement of the downtown terminals and for the relief of congestion have been brought forth during the past forty years, but no comprehensive solution to the problem has yet been decided upon. Except for the building of a few individual facilities, mainly on the sites of the earlier facilities that they replaced, the railway pattern of today is essentially that of 1885.

The outstanding features of the railway terminal problem of downtown Chicago were recognized shortly after the turn of the century by Frederic A. Delano, then president of the Wabash Railway, who stated:

Every student of the present railway conditions in Chicago must know that to improve the facilities will be-fore long necessitate a very large expenditure of money. In the case of several of the depots, the value of adjacent property and the position of existing thoroughfares makes it almost impossible to enlarge the station, and no matter how large the expenditure, the inconvenience involved in reaching some of the stations, or of going from one station to another, will remain. This is the case because they are so placed that they cannot be reached by the lines of traffic radiating from the business center to the north, west and south sides without a change of cars, while no simple transportation facilities can be arranged to connect all the stations. As a result, a very large sum of money is annually expended by the railways for the transportation of passengers, baggage, mail and express from one depot to another.¹

Delano suggested that six depots be constructed side by side on property already owned by the railways, from State to Canal streets, on Twelfth Street or Taylor Street, a mile south of the Loop district. In order to make room for those facilities, the Chicago River was to have been straightened, thereby elimi-

¹Frederic A. Delano, Chicago Railway Terminals, A Suggested Solution for the Chicago Terminal Problem (Chicago: Printed for Private Distribution, 1906), p. 6.

nating a wide eastward bend that narrowed the neck of the peninsula upon which the central business district is located. Mail, express, and less-than-carload freight were to have been handled on separate platforms and tracks immediately underneath the passenger depots.

That plan would have placed the six depots in proximity and would have relieved much of the confusion of railway facilities north of Twelfth Street, making that land just south of the business district available for commercial expansion. The plan, however, would have left the terminals unconsolidated, would have created a formidable barrier across the peninsula at Twelfth Street, and would have produced undesirable congestion in the vicinity of the terminals. Furthermore, it assumed that all of the routes used by the railways in reaching the metropolitan area and in approaching the central part of Chicago would have continued in use. The change in the general railway pattern that the plan would have effectuated, therefore, would have been slight.

That the Delano plan received serious consideration is evident from the inclusion of some of its essential features in the monumental Plan of Chicago of Burnham and Bennett. That plan, probably the most important comprehensive city plan ever evolved, formed the basis for many of the outstanding public improvements in Chicago from the date of its publication in 1909 to the present. Indeed, many of the projects first proposed then are even now being studied for possible post-war construction.

Burnham and Bennett pointed out the desirability of placing all the passenger terminals either above or below the street level, and suggested that they must always be arranged so as to avoid the closing of streets.¹ That principle has been fundamental in nearly all of the subsequent terminal plans.

The plans for the co-ordination of freight transportation facilities proposed by Burnham and Bennett have largely been carried out. They proposed a great central freight yard at the "center of gravity" of the metropolitan freight movement, which was shown to be at the present site of Clearing Yard.²

The Burnham and Bennett plan proposed two general loca-

¹Daniel H. Burnham and Edward H. Bennett, Plan of Chicago (Chicago: The Commercial Club, 1909), p. 70.

²Ibid., p. 64.

tions for the future passenger terminals, one along the west bank of the Chicago River's south branch, and the other on Twelfth Street as suggested by Delano.¹

Through routing of suburban trains.--The proposals of Delano and of Burnham and Bennett for the location of several of the passenger terminals along Twelfth Street would have involved considerable difficulty in the handling of passengers to and from the suburban trains as the result of the distance of Twelfth Street from the main part of the business district. A partial solution to the problem was suggested in which suburban trains would operate north of the general passenger terminals to the central business district in tunnels. Delano pointed out that the requirements for the location of a general terminal for long-distance passengers differ from those for a suburban station, in that the former travelers do not commonly proceed directly between train and office, and that when they do the use of a taxicab or other conveyance is not objectionable, as it would be for suburban passengers who wish to use only one conveyance between home and place of business.²

A solution to the problem of suitable location for the Chicago terminals of the suburban passenger trains was offered in the through routing of such trains past the business district to terminals on the opposite side of the business area than that from which they come. A train from south of Chicago, for example, would proceed to the business district, discharge its passengers, and continue on the line of another railway to the north or west sides of the city.³ That plan, it was pointed out, would enable passengers to travel through from one side of the city to the other without changing trains in the business district, and would eliminate back-up movements of trains between terminals and coach yards. The most serious objection, however, was that the peak traffic loads would never be available in both directions at the same time, and consequently trains inbound to the business dis-

¹Ibid., p. 70.

²Delano, "Railway Terminals and Their Relation to City Planning," The Relations of Railways to City Development (Washington: The American Institute of Architects, 1909), p. 9.

³George Ellsworth Hooker, Through Routes for Chicago's Steam Railroads (Chicago: The City Club of Chicago, 1914).

trict with full loads would usually be nearly empty leaving the central area.¹

Aside from the proposals for through routing, it was recognized that elaborate and spacious terminals were not required for the suburban traffic, and that if separate terminals were provided neither the suburban terminals nor the major terminals for long-distance inter-city traffic need be as large as if the two services were combined in the same terminal.² Most of the terminal consolidation plans after 1909, however, failed, in general, to accept the desirability of such separation in the detailed consideration of terminal location.

Northwestern Depot.--Two large new depots were constructed in conformance with the suggestions of the Plan of Chicago. One was under way when the plan was published, and the other was soon after announced, to be completed more than a decade later.

The Chicago and North Western Railway, which for nearly sixty years had conducted its passenger operations from Kinzie and Wells streets on the north bank of the Chicago River, completed a large new depot in 1911 at Canal and Madison streets, just west of the central business district. The station was made necessary by increased traffic and by the limited capacity of the former depot, which was located at a place where purchase of additional land for expansion was impossible. Furthermore, in order to reach the old station, trains had to pass over a two-track moveable bridge that spanned the north branch of the river. In order to eliminate those handicaps, it was decided to seek a new location.³ The place selected became the site of the present Northwestern Depot (Fig. 6).

The terminal building of the Northwestern Depot is on Madison Street, a half-mile south of Kinzie Street. Behind the station building is a long elevated structure with sixteen station tracks, and six tracks leading into the station. It was necessary

¹Through routing was adopted for Chicago's street and elevated railways in 1913.

²Delano, "The Chicago Plan with Particular Reference to the Railway Terminal Problem," Journal of Political Economy, XXI (1913), 828.

³"The New Passenger Terminal of the Chicago and North Western Railway," Journal of the Western Society of Engineers, XVI (1911), 933-1140.

to relocate and elevate a part of the old line near Kinzie Street and to construct a new elevated line a half mile in length between Kinzie and Madison streets. It created a wall that was thought to have prevented expansion westward of the northern part of the business district that was located just across the river.

The Union Station.--At about the time that the Northwestern Depot was completed, the Pennsylvania Railroad and the companies associated with it in the Union Station, then two blocks south of the new Northwestern Depot, announced plans to construct on a nearby site a monumental new Union Station to replace the old one that had been in continuous use since 1880. The site chosen was, as in the case of the Northwestern Depot, in conformance with the Plan of Chicago. The tracks were to be depressed along the west bank of the river, east of Canal Street, over which the east-west streets were to be carried on bridges.¹ In order to construct the station at the proposed location it was necessary that the Pennsylvania Railroad provide a new freight terminal to replace the one that was to be removed from the proposed depot site. The railway planned a large freight terminal on the south side of Van Buren Street, between Jefferson and Des Plaines streets, two blocks west of the passenger line. In order to reach the proposed freight terminal it would have been necessary to construct a double track elevated line a mile long from the main line at Sixteenth Street.² A strip of land a block wide had been purchased to accommodate the proposed line.

When application was made to the City Council for the necessary ordinances to permit the Union Station and freight terminal project to be constructed, serious objections were raised. It was feared that the new terminal would prejudice future attempts to consolidate all the railway terminals,³ that the freight line would be unsightly, and that both lines would seriously handicap street traffic and prevent the opening of through streets

¹The Railway Terminal Problem of Chicago (Chicago: The City Club of Chicago, 1913), pp. 1-5.

²Ibid., pp. 11-19.

³"Features of the Complicated Problem of Location of Chicago's Passenger and Freight Terminals," Chicago Commerce, IX (1913), 12. The objection was raised by Charles H. Wacker, president of the Chicago Plan Commission.

west from the business district.¹ Undoubtedly the wall-like barrier created by the approach to the Northwestern Depot was responsible for the objections of many people, who feared that the Union Station plans would result in the creation of additional serious barriers between the business district and the west side of the city. Particularly objectionable was the proposed freight line, which was subsequently dropped from the plans, although the railway company had purchased many acres of land for the line between Jefferson and Des Plaines streets. That land was long held by the railway, preventing its utilization for other purposes. Not until late in 1942 was it finally sold.²

The necessary ordinance was passed by the City Council on March 23, 1914, permitting construction of the new terminal to begin, but without the freight line. Under the terms of the ordinance, the railways paid for the vacated streets, were required to maintain twelve viaducts in order to carry the street approaches to the Chicago River bridges over the tracks, and were required to widen Canal Street in order that that artery could carry through vehicular traffic. As a result of the latter provision, the station head-house was constructed in two portions, the portion between Canal Street and the river serving as the train concourse between the two sets of stub-ended tracks, and the portion west of Canal Street serving as the main waiting room, over which an office building for the use of the railway companies was constructed.³ Passage under Canal Street between the two portions of the station was provided for by the construction of a wide tunnel lined by ticket-offices.⁴

¹The Railway Terminal Problem of Chicago, pp. 10-21. That publication contains a summary of the principal objections to the Pennsylvania Railroad's proposed terminal development.

²Chicago Daily News, October 29, 1942.

³The office section of the terminal was added after the original plans were completed as "a means of securing more efficient utilization of the full block of valuable real estate to be occupied by the head-house" (Railway Age, LXVII [1922], 323).

⁴Mr. C. E. Cox, Assistant Chief Engineer of the Chicago Union Station Company, furnished detailed information regarding the design and operation of the terminal for which the author is indebted.

For a description of the Union Station see D'Esposito (op. cit.) and Railway Age [LXX [1925], 7-28).

Completion of the Union Station was delayed by the first World War, but the terminal was opened in 1925, and the old nearby depot was subsequently removed.

The Union Station is Chicago's largest and newest passenger terminal.¹ The double-stub layout consists of 24 tracks with a standing capacity of 332 cars, of which 14 tracks with a capacity of 191 cars are at the south end, used by the Pennsylvania, Burlington, and Alton railways, and 10 tracks, for 141 cars, are at the north end and are used by the Milwaukee Road.² Two through tracks connect north and south approaches to the station. They are alongside the Chicago River, under a parking lot at the east end of the train concourse. They provide a limited amount of flexibility in the operation of the terminal and furnish a through route for mail, baggage, and express cars, freight trains, and occasional special passenger trains.

In the selection of the site for the Union Station, the participating railways had to consider the approaches from both north and south since the railways were to enter from both directions, as well as the proximity to the central business district and to the mail handling facilities. The location seems to be well suited to the functions that the terminal performs.

Placement of the approach tracks to the Union Station below the level of the streets and the viaduct approaches to the Chicago River bridges, an essential part of the terminal improvement project, permitted the construction of noteworthy buildings on air-rights over the tracks both north and south of the depot. On

¹The Union Station and associated facilities are operated by the Chicago Union Station Company, which, in turn, is owned by the Pittsburgh, Fort Wayne and Chicago Railway, the Pittsburgh, Cincinnati, Chicago and St. Louis Railway, the Milwaukee Road, and the Burlington, each of which has a quarter interest. Through control of the first two railways, the Pennsylvania Railroad has a half ownership in the station company. The Alton Road (then the Chicago and Alton) was to have participated as an owner, but financial difficulties prevented it from so doing, and it uses the facilities as a tenant.

²The Pennsylvania's subsidiary Pittsburgh, Cincinnati, Chicago and St. Louis (Panhandle) trains used the north approach until about 1930, reaching the station over the circuitous inner belt and Kinzie Street routes.

³The Chicago Daily News Building uses a unique system of smoke disposal, in which the locomotive exhaust is emitted from the roof of the building.

the north side of the station, three blocks north of the head-house and between the river and the Northwestern Depot, is the large Chicago Daily News Building, constructed over the Milwaukee Road's approach tracks to the Union Station (Fig. 6).

An extensive rearrangement and replacement of coach yard, mail, express, and less-than-carload freight handling facilities was necessary along the south approach to the Union Station for a distance of two miles.

Most noteworthy and spectacular of the new facilities is the main Chicago post office two blocks south of the station head-house. The building, two city blocks in length, is essentially an expansion of an earlier parcel post terminal on the same site. The latter was incorporated as a part of the newer and larger building. Both are so located that trains placed in the south tracks of the depot for loading of passengers can at the same time receive their mail loads, which are delivered by chutes directly to the mail cars at the head ends of the outbound trains.

The construction of the Union Station, and the straightening of the Chicago River which was carried out shortly after, necessitated a comprehensive replanning and reconstruction of many of the railway facilities in the area south of the depot and just west of the Chicago River's south branch. The downtown freight station and team tracks of the Pennsylvania Railroad, which were on the site of the Union Station, were removed and replaced by a very large warehouse terminal a few blocks to the south. Large new freight warehouses and terminal buildings were also constructed by the Burlington and Alton railways. All of them are between Canal Street and the Chicago River, between the Union Station and Twelfth Street. In addition, the Baltimore and Ohio coach yards, which were located in the same general area, were demolished and replaced by new yards two miles to the west at Sixteenth and Wolcott streets.

The Union Station project, therefore, involved not only the construction of a monumental passenger terminal building, but also a comprehensive rearrangement of a large number of facilities.

One fundamental feature of the Union Station project must be borne in mind. Although the project resulted in new and modern railway facilities, no reduction in the amount of land devoted to railway uses resulted. Furthermore, the new facilities are fixed and represent new elements that must be included in any compre-

hensive plan for the solution of the railway terminal problem.

Terminal consolidation plans, 1912-1915.--The announcement of the plans for the Union Station and the numerous objections that developed to some phases of the proposed project encouraged several investigations of the entire terminal problem of the city. Within the next few years several voluminous reports were issued. Although they all agreed on certain general principles, diverse proposals were made for the location and extent of the new facilities that seemed to be required.

Two independent large-scale investigations were carried out. One, sponsored by a committee of the City Council, was made by John F. Wallace; the other, sponsored by a citizens' committee organized by the City Club of Chicago, was carried out by Bion J. Arnold, who had recently been very active in the development of the Grand Central Terminal project in New York. Both investigators were charged with the responsibility of reviewing the various terminal proposals that had been made, and either to recommend the adoption of one of them or evolve new and better plans.

One of the basic assumptions implied in both investigations and stated in the Arnold report greatly reduces the applicability of both recommendations to present conditions. Wallace stated that:

In these studies the probable growth of traffic was determined and it was found that if Chicago maintains the same rate of growth in railroad business as the entire country, within a given period the passenger train movement of Chicago and vicinity is likely to increase as the square of the population of the entire country within the same period, i.e., if the population doubles the train movement would quadruple. In the same manner it was found that the passenger traffic will likely increase as the cube of the population of the entire country.¹

The expected increase of railway traffic upon which most of the plans were predicated did not take place; in fact, since 1920 a very considerable decrease in traffic, except for the second World War, was brought about by the motor car and truck, the use of which had hardly begun when the studies were made.

Many plans were reviewed by both Wallace and Arnold.² Most

¹Bion J. Arnold, Report on the Re-arrangement and Development of the Steam Railroad Terminals of the City of Chicago, Submitted to the Citizens' Terminal Plan Committee of Chicago (Chicago, November 18, 1913), p. 13.

²Four of the proposals were especially noteworthy. They

of them proposed a reduction in the number of passenger depots, but the plans differed greatly in the locations and arrangements

were made, respectively, by the Chicago Plan Commission, by Jarvis Hunt, by Pond and Pond, and by Guenzel and Drummond. The latter three were architectural firms.

The Chicago Plan Commission proposals embraced several features that had previously been included in the Plan of Chicago, but with important modifications. The Plan Commission proposed, as did most of the other plans, the straightening of the Chicago River between Twelfth Street and Sixteenth Street, and a terminal of the loop type at Twelfth Street on each side of the river, the one on the west to be used by the roads now using the Union and Grand Central stations, and the one on the east for the roads that use the La Salle and Dearborn stations. The Northwestern and Illinois Central depots were to be retained in their present locations. Streets were to be put through the area south of Twelfth Street and grade separations were to be provided. The area north of Twelfth Street but south of the business district was to be devoted to freight terminals (The Railway Terminal Problem of Chicago, pp. 10-28, and Arnold [op. cit.], pp. 153-55).

The Hunt plan provided a complete separation of long-distance from suburban traffic. The latter was to be carried in a large electrified suburban loop encircling the central business district, with stations at various points around the loop route, much like the present rapid transit loop. The long-distance passenger traffic was to be handled at a single unified depot to occupy the entire area from Twelfth to Sixteenth streets and from State Street west to the straightened Chicago River. The depot building was to occupy the center of the area, surrounded by a complex series of loops at various levels, both above and below the streets, which would be extended southward from the central business area and grade-separated from the railway tracks. The St. Charles Air Line, enlarged, was to provide access to the terminal for railways from the west and for those using the lake front route. Freight was to be handled south of Sixteenth Street (The Railway Terminal Problem of Chicago, pp. 29-40).

The Pond plan emphasized the area west of the Chicago River and business district rather than the area to the south as did most of the other plans. It would have involved the construction of a great railway route two city blocks in width west of the river from Sixteenth Street to Madison Street. At various locations along the route a number of passenger depots were to have been provided. The route was to have comprised two parallel double-decked structures with long-distance traffic on one level and the suburban trains on the other. One structure was to have been used for northbound trains and the other for southbound, the trains pausing for loading or unloading at various points along the route in proximity to the depot buildings. The plan called for, in effect, a series of through-route stations, with the originating and terminating traffic handled at various points over a distance of a mile. East-west streets were to pass underneath the railway structures. The plan would have separated incoming and outgoing passengers and provided for either loop operation with reversal of the direction of train movement after loading or discharging, or through operation in the same direction. The freight was to have been handled in redesigned facilities in the area now occupied by railways south and southwest of the business district. Railway use of the land north of Twelfth Street and east of the river was

of both passenger and freight terminals. They differed also in the amount of railway land that would have been released for other uses.

The Arnold report recommended, in addition to the straightening of the Chicago River, the electrification and placing in subway tunnels of all tracks in and near the central business district with the exception of the trackage along the lake front and the facilities in connection with the Northwestern Depot.

The Wallace Report¹ advocated the construction of the Union Station and of the Pennsylvania Railroad freight terminal as planned, with the sole exception that a location for the latter was suggested one block south of that proposed by the railway. In addition, the report reiterated the desirability of extending through streets west and south of the business district, of reducing the amount of freight handled in central Chicago, and of eventually consolidating the older passenger terminals. Several alternative schemes were presented, but no specific terminal pattern was advocated to the exclusion of others.

Meanwhile, the approval by the City Council of the Union Station development and the start of construction on that project introduced a new element into the terminal pattern that partially invalidated many of the plans that had been proposed without regard for the new facilities. A second new element was introduced

to have been discontinued, thereby making the area available for expansion of business (The Railway Terminal Problem of Chicago, pp. 41-55). Objections to the Pond plan centered about the barrier effect that would have been created by the double wall of railway structures west of the river (Arnold, op. cit., p. 156).

The Guenzel and Drummond plan also provided for a railway route to the west of the Chicago River at Canal Street, along which four stations were to have been located. The tracks were to be on three levels, those for suburban trains below the street grade, those for outgoing long-distance trains above the street, and those for incoming long-distance trains on a second level above the street. Freight was to have been handled in warehouse terminals with basement tracks near the passenger right-of-way. The plan involved retirement from railway use of the entire area south of the central business district, except along the lake front (The Railway Terminal Problem of Chicago, pp. 55-76). The plan had the same objectionable feature as the Pond plan, in addition to greater cost and complete disregard of existing railway investments in the central part of Chicago (Arnold, op. cit., pp. 157-59).

¹Chicago Railway Terminal Commission, Preliminary Report, Submitted to City Council Committee on Railway Terminals, March 29, 1915.

shortly thereafter in the form of specific commitments for the development of another important feature of the original Plan of Chicago: the improvement of the lake front.

The Lake Front Ordinance.¹--The improvement of Chicago's lake front, particularly on the South Side, has had important direct effects upon several railways as well as upon the plans for terminal redevelopment. As the result of their route along the lake shore north of Fifty-first Street, the Illinois Central and the Michigan Central have been particularly affected.

In order to develop a park area along the lake shore, the South Park Commission, the municipal body then having control of the area, in 1912 received from the Illinois Central the riparian rights north of Fifty-first Street. In the succeeding years a number of studies and plans were made for the development of the property as a park. The War Department, however, before giving a permit to fill in the land, insisted upon plans for a harbor development south of Twelfth Street. Both park and harbor areas were allocated in the Lake Front Ordinance of 1919, which made possible the present Burnham Park on Chicago's South Side lake shore, although changing requirements have eliminated the necessity for the harbor at the proposed location.

The Lake Front Ordinance, passed on July 21, 1919,¹ in addition to providing for electrified operation of the trains on the lake front route, provided for a monumental passenger terminal to be erected on the lake front at Twelfth Street east of Michigan Avenue. That development, on the site of the existing depot, was to provide accommodations for the railways that used the Grand Central, La Salle, and Dearborn stations as well as for the Illinois Central and its tenants. The new depot was to have made possible the consolidation of the terminals south of the central business district. The Illinois Central was prohibited from making any capital improvements on its right-of-way north of Thirty-first Street unless in conformity with the new terminal development plan.² In return for the obligations that it assumed,

¹Journal of the Proceedings of the City Council, City of Chicago, July 21, 1919, pp. 969-1000.

²Illinois Central Railroad Company Proposed Lake Front Passenger Terminal, Twelfth Street Boulevard and Indiana Avenue (Chicago: Illinois Central Railroad Company, 1919). That publication contains complete details of the proposed terminal building.

the Illinois Central was granted a strip of lake front land to enable it to enlarge its right-of-way in order to make room for the proposed station.¹

The plans for the lake front terminal, for which both the Illinois Central Railroad and the public agencies assumed definite obligations, thus added a new element to the many that had entered the confused terminal picture since the formulation of the earlier plans.²

The railways' plans for individual terminals.--The proposed lake front terminal was not immediately constructed. Several of the railways that were to use it presented alternative plans for the redevelopment of their own terminals on the land that they had been using since their first entrance to the city. It was obvious that the railways were not to give up the terminal sites that they had secured in the frenzied competition of the preceding century without strongly presenting their case.

The Chicago and Western Indiana and its tenant Dearborn Station roads using the oldest passenger depot in Chicago presented an elaborate plan for the complete reconstruction of their properties south of the central business district.³ The plan provided for a new passenger station located on Polk Street and extending from State to Clark streets, and a comprehensive scheme for freight terminals immediately to the south to accommodate the several rail-

¹The depot building was to be monumental in character, in keeping with the several museum and other public buildings erected in the vicinity. An important element of the plan was the provision of a new east-west railway line parallel to Eighteenth Street, thereby permitting the railways from the south and west to reach the lake front. The St. Charles Air Line could not be widened to accommodate the expected additional traffic.

²Following the passage of the Lake Front Ordinance, several new studies were released in which the proposed terminal was incorporated as an integral part of the consolidation schemes. They, for the most part, added little new understanding to the problem, the essential elements of which were clear to both the railways and the public agencies. The following are among such studies:

Report of John F. Wallace, Chairman, Chicago Railway Terminal Commission (Chicago, March, 1921).

National Association of Owners of Railroad Securities, Report of Board of Economics and Engineering on Joint Terminals at Chicago, Illinois (New York, 1922).

Committee on Co-ordination of Chicago Terminals, The Railway Passenger Terminal Problem at Chicago (Chicago, 1927).

³Alfred Fellheimer, Studies for State Street Terminal Improvement (New York, 1922).

ways that operate freight facilities in the vicinity of Dearborn Station. The principal objection of the city to the presence of railways in the area immediately to the south of the central business district was overcome in the plans by the incorporation of through north-south streets as integral parts of the design.¹ The plan provided for a complete utilization of all of the Chicago and Western Indiana property, as well as the land now used by its associated railways for freight stations. The area used by railways would not have been significantly reduced had the scheme been carried out. Publication of the plan indicated the unwillingness of the Western Indiana road and its tenants to participate in the use of the proposed lake front depot, which involved relinquishment of the supposed competitive advantages of an independent terminal close to the commercial core of Chicago.

The owners of the La Salle Street Station, the New York Central and Rock Island railways, followed the lead of the Western Indiana in announcing their unwillingness to participate in a joint lake front terminal, at the same time indicating that they were developing their own plans for a new terminal to replace the La Salle Street Station on the same site.²

The decline in railway traffic during the past two decades, the growing importance of automobile and motor truck in both competing with railways and in modifying requirements of urban design, and the consequent financial difficulties of many railways prevented any of the terminal plans from bearing fruit. The new elements in the railway picture, however, encouraged a further analysis of the terminal requirements, and several reports were issued after 1930. Most important of them were the Noonan and the Boatner reports.

The Noonan report.--The Noonan report, published in 1933,³ differed from most of the previous reports in proposing the complete elimination of all railways from the area south of the central business district and between the Chicago River's south

¹For a critical discussion of the terminal plan made by the Chicago and Western Indiana, see "Chicago Gets a New Passenger Terminal Plan (Railway Age, LXXIV [1923], 263-67).

²Chicago Daily News, February 14, 1928.

³City Council Committee on Railway Terminals, The Railway Passenger Terminal Problem at Chicago, Prepared by Edward Noonan, Consulting Engineer (Chicago, 1933).

branch and the lake front route. The advantage of the elimination, the report pointed out, was that expensive viaducts and grade separations would not be necessary in order to open through streets between the business district and the southern part of the city through the area that is now occupied by railways.

Several important changes in the street and land use pattern of downtown Chicago had occurred in the years preceding the Noonan study, and greatly influenced its recommendations. In 1920 a major traffic artery was opened between the central business district and the North Side by the completion of the Michigan Avenue Bridge. A similar connection was planned to link the Outer Drives along the lake front. A major east-west artery, Wacker Drive, a double-decked street along the Chicago River, passed just to the north of the commercial core of the city. Finally, the world's largest commercial building, the Merchandise Mart, was constructed northwest of the central business district. The result of all those improvements was that the "center of gravity" of the business district began to shift northward and most of the new building construction in the downtown area was along its northern fringe. It became evident that the Twelfth Street locations for passenger terminals recommended in previous studies were losing much of their former importance.

The Noonan study recommended the construction of a large passenger depot at Randolph Street east of Michigan Avenue, near the northeastern corner of the central business district and just east of the present Illinois Central Suburban terminal (Fig. 6). That location, the report pointed out, would be conveniently accessible over the newly constructed streets and boulevards, would be close to the business center, and would be on land already devoted to railway use, while eliminating many of the facilities in the railway area south of the business district that had been barriers to free intra-city communication. The depot was to be of the stub type, the tracks ending near the south bank of the Chicago River. Freight terminals were to be consolidated in the area west of Clark Street, thereby retiring from railway use the land now devoted to the approaches and freight houses of the Dearborn Station group of railways. The decreased railway traffic of the period preceding the Noonan study pointed to the feasibility of a smaller terminal than those recommended by earlier investigators. The proposed Randolph Street depot was designed with but twenty tracks

for long-distance inter-city trains. A separate small terminal, representing an expansion of the present Illinois Central suburban station, was suggested to accommodate the suburban traffic of the railways that would participate in the terminal project.

As an integral part of the development recommended by the Noonan study, projection of streets and the development of buildings on air rights in the area north of Randolph Street and east of Michigan Avenue was urged.

The Boatner report.--The Federal Co-ordinator of Transportation, as a part of a comprehensive study of the nation's railway problems during the depression of the early 'thirties, sponsored a study of Chicago's railway terminals. The report of the investigation appeared shortly after the Noonan report.¹ As a prerequisite to its specific recommendations the Boatner report presented detailed studies of freight and passenger traffic flows and train movements through the Chicago terminal district.

The basic assumption of the Boatner study was that considerable savings would result if the traffic were concentrated in a limited number of routes and yards, thereby eliminating many of the transfer movements between railways, as well as eliminating some facilities the functions of which duplicated those of other facilities.²

The report recommended the consolidation of major freight classification into eight of the principal outlying yards.³ In those yards all road freight trains were to be made up and broken up. It was estimated that such pooling of facilities would reduce the labor force by 20 per cent, would effect a 27 per cent reduction in the number of engine hours required for switching in the yards, and would produce annual savings of nearly \$3,500,000.⁴ By

¹Report on Railroad Terminal Co-ordination, Chicago, Illinois, and Vicinity, Prepared for the Western Regional Co-ordinating Committee in compliance with the Emergency Railroad Transportation Act, 1933, under the direction of the Chicago Terminal Committee, V. V. Boatner, Chairman (Chicago, 1936).

²"Large Savings Claimed for Terminal Unification," Railway Age, XCVIII (February 23, 1935), 299-302. That article is a brief review of the outstanding findings and recommendations of the Boatner Report.

³The yards are: Bensenville-Proviso, the Burlington Morton-Park-Clyde yard, the Fifty-ninth Street Pennsylvania yard, Clearing, Blue Island-Gibson, and Markham.

⁴Report on Railroad Terminal Co-ordination, Chicago, Illinois, and Vicinity, p. 11.

more direct routings and shorter train movements, furthermore, it was estimated that the number of secondary and industrial freight yards could be reduced to eighteen. Concentration of traffic in the proposed yards would, it was estimated, reduce the expense of interchange and transfer switching by more than three million dollars.¹ By the co-ordination of switching movements, the pooling of many of the downtown freight houses, and more extensive reciprocal switching agreements to reduce non-productive mileage of switch and transfer engines the report estimated additional savings in the operation of the Chicago switching district of several million dollars per year. As a first step, the merger of all switching lines, including the Outer Belt, into a common terminal property was recommended.²

The Boatner report recommended pooling and co-ordination of some passenger terminals as a means of effecting further savings in the operation of Chicago's railways and as a means of releasing for other use a portion of the land now occupied by railways south of the central business district. By eliminating the Grand Central and Dearborn stations and retaining the present Northwestern, Union, Central, and La Salle Street stations savings estimated at more than \$600,000 per year in operating expenses could be effected,³ and a considerable reduction in the area of Central Chicago used by railways could be brought about, according to the report. No new passenger terminal facilities were recommended, as it was found that the four terminals would be adequate for the volume of traffic that existed at the time of the study.

The Boatner report has been criticized because its recommendations were based upon the volume of traffic during 1934, a depression year. Subsequent increases in railway traffic, it has been claimed, point to the need for somewhat more extensive facilities than those recommended.

Elements of Terminal Consolidation Plans

Although the many plans brought out during the last forty years for the consolidation, co-ordination, and rearrangement of Chicago's freight and passenger railway terminal facilities vary greatly in their specific recommendations, a number of elements

¹Ibid., p. 12.

²Ibid., p. 19.

³Ibid., pp. 16-17.

common to most of the plans may be recognized.

Reduction in land area devoted to railway use.--Practically all of the plans are predicated upon a reduction in the area of land to be devoted to railway use.

It has been shown in this dissertation that the competition of the railways for the best entrance routes to Chicago and for the best and most advantageous terminal sites has resulted, in many cases, in the provision of many facilities that could be eliminated by pooling of some operations, or could be jointly operated by more than one railway for their mutual advantage as well as that of the shippers, passengers, and public. Considerable areas of land now devoted to parallel rights-of-way, and to minor terminal facilities the functions of which could be carried on in a few modern and well located terminals, could be released.

Although the co-ordinated operation of the freight facilities in the Chicago terminal district would result in the elimination of some yards and possibly of some routes, the center of interest has always been in the extremely valuable land close to the business district, particularly that land between the Chicago River and Lake Michigan for a mile or two south of the Loop area. There is but a narrow strip of land only two short city blocks in width between the Illinois Central's lake front route and the railway freight stations west of State Street, along which the business district can expand southward. The railways on both sides have exercised a detrimental effect upon potential development within that strip. Thus the business district is confined to the north of the railway phalanx. Release of some of that large area, particularly the part used by the freight and passenger facilities of the group of railways associated in the Dearborn Station, would free the business district for southward expansion.¹

Air rights development.--Many of the later plans call for development of air rights over the railway tracks as a method of providing additional area for relief of the crowding and congestion of the central business district. The demonstration of the

¹Although many of the earlier plans contemplated a similar reduction in the land area devoted to railways southwest of the business district and west of the Chicago River, the straightening of the river, the construction of the Union Station, of the Post Office, and of new freight facilities has made release of land in that section of central Chicago improbable.

advantages of utilizing air rights in connection with the Grand Central and Pennsylvania terminal developments in New York City has focused attention upon the possibility of similar development in Chicago. Conditions in the two cities, however, are fundamentally different. Whereas New York's business districts are confined on a crowded island surrounded by wide water barriers, Chicago's central business district is bordered by a wide area of residential, commercial, and industrial development that is badly blighted and depreciated in value. There is no wide barrier to the expansion of Chicago's central business district, except Lake Michigan to the east and the railway phalanx to the south. Noteworthy air rights development, however, has taken place northwest and west of the business district, where the Merchandise Mart and the Chicago Daily News Building, respectively, occupy areas over the railway tracks. As the result of the decentralization of many of the functions of the central business district and the large areas available for expansion of the district, very little development of additional air rights will be needed.

Electrification.--Most of the terminal consolidation plans are based upon the assumption that all, or a considerable portion, portion, of the trackage of the participating railways within the terminal district are to be electrified. Air rights development and the extension of many streets over railway tracks are incorporated in the various terminal proposals because it was assumed that electrification would provide elimination of the smoke and gases that would otherwise accumulate.

A comprehensive study of the electrification possibilities of the Chicago railways was made in 1912, primarily in relation to smoke elimination. The report¹ stated that, although complete electrification was technically practicable, it would be financially impossible.²

The introduction of new types of motive power, particularly the Diesel-electric locomotive, which is essentially an electric locomotive that carries its own power plant thereby making

¹Smoke Abatement and Electrification of Railway Terminals in Chicago, Report of the Chicago Association of Commerce Committee on Smoke Abatement and Electrification of Railway Terminals (Chicago: Chicago Association of Commerce, 1915).

²The report further stated that complete elimination of the steam locomotive would reduce the gaseous pollution of the air by only 5 per cent (ibid., p. 277).

unnecessary the expensive fixed capital investment in power plants and transmission lines, has greatly reduced the necessity for electrification. The Diesel-electric locomotive, however, due to carbon monoxide fumes, is not suitable for extensive underground use and therefore cannot be associated with large-scale air rights developments.

The Illinois Central's suburban trackage constitutes the only steam railway electrification in metropolitan Chicago. It was carried out in conformance with the Lake Front Ordinance, and not primarily to increase the railway's operating efficiency or to reduce its costs.¹ In spite of the great increase in passenger traffic that occurred as a result of the electrification, and with the heaviest railway passenger traffic density in the metropolitan area (Fig. 4), the earnings from the service are only about 1 per cent annually on the total investment, not only of the electrification, but of all the facilities used in the service.²

Electrification of railway facilities is practicable without public subsidy only where such improvement will result in greater efficiency and lower operating costs to the railways. Most railways are unable to finance electrification projects, and their supposed advantages are open to question in view of the newer types of power available, and the lack of necessity for air rights development in Chicago.

Extension of through streets.--The securing of better communication between the central business district and the other parts of the city, particularly to the south, is an essential element of nearly all terminal plans. The multitudinous railway facilities in the phalanx south of the Loop prevent the construction of streets in that direction without expensive viaducts. The straightening of the Chicago River was carried out with the dual objective of permitting a more orderly arrangement of railway facilities in the vicinity and thereby of removing obstructions to through streets. The former river bed is unused, however, and

¹Further electrification in conformance with the terms of the ordinance has not been carried out, although most freight is hauled on transfer moves with Diesel-electric switch engines. Through passenger service is performed by steam and Diesel-electric locomotives.

²Illinois Central Railroad Company, Illinois Central Suburban Service, Report to Employees on 1940 Operations (Chicago: Illinois Central Railroad Company, 1941).

new streets have not as yet been extended through the area.

Railway Facilities in a Comprehensive City Plan

Most of the plans for rearrangement of railway facilities have been primarily concerned either with the immediate surroundings of the central business district, or with the operation of the railway facilities as such. No comprehensive study or plan has been evolved that considers in detail the relationships between the railway pattern and the other elements of the urban pattern, in order to insure that the railway facilities will function more effectively as integral parts of the metropolitan area as a whole. The relationships that should be considered include, among others, those between the railways and the location of industrial districts, between the railways and the quality and character of residential areas, and the patterns of streets, highways, and other transportation arteries, including local rapid transit lines.

Railways and industrial localization.--The location of industries within metropolitan Chicago is intimately related to the pattern of the railways. There are but few industries that do not ship and receive materials and merchandise by rail, either directly at their own sidings, through freight stations, or by means of the pick-up and delivery motor truck service that the railways and freight forwarders provide. Long ribbons of industry have developed along most of the trunk line railway routes in the built-up portions of the metropolitan area as well as in the rural-urban fringe. In but few instances are industrial areas planned as units, such as Clearing or the Central Manufacturing District. More commonly the industrial strips are composed of numerous unrelated establishments tied together only by the steel rails. Such industrial strips are among the most fixed of all elements in the city pattern. Re-arrangement of the railway facilities cannot involve abandonment of major railway routes that are lined with industrial sidings, lest the many plants served by them be unprovided with rail connections. Thus a re-routing of through trains entering and leaving the city will not in itself make possible the elimination of any important railway rights-of-way.

Decentralization of industry must be considered in any comprehensive metropolitan plan. The advantages of belt line service have encouraged many industries to locate on circumferential routes rather than on the radial lines. The result is re-

flected in a decreasing tonnage of freight in the central part of Chicago relative to the tonnage on its periphery. The motor truck makes accessible the newer freight stations on the urban fringe for those industries that ship and receive mainly package freight. There is an increasing tendency for less-than-carload as well as carload freight to avoid the congested central part of Chicago. In the future it is probable that only freight originating or terminating at commercial and industrial establishments in central Chicago will move through the more congested parts of the city, all other movements and interchanges taking place in the outlying yards and freight stations, and in the peripheral industrial sidings.

Railways and residential areas.--The railways have an important relationship to the character and quality, as well as to the areal extent, of the residential sections of metropolitan Chicago.

Surrounding the central business district is an area of about twenty-three square miles of blighted and near-blighted residential neighborhoods.¹ Undoubtedly the concentration of railways close to the central part of Chicago and the convergence of the trunk lines around the central business district have had important effects in accelerating the deterioration of such areas. The elimination of some of the passenger facilities, however, would greatly reduce the adverse effects of the railways on those areas. The gradual replacement of steam switch engines by Diesel-electric locomotives is greatly reducing the smoke nuisance, and locomotives in the future will probably no longer exercise a very detrimental effect upon the redevelopment of many parts of central Chicago.

An important effect upon residential areas results from the fact that most of the railway lines within the City of Chicago are elevated. High embankments, in many cases with unsightly retaining walls, divide the city, as has already been noted, into cellular compartments. Elevation of railways, rather than their depression, has been the established policy of the city.² While

¹Studies made by the research division of the Chicago Plan Commission, in which the author participated.

²The first track elevation, other than short grade-separations at railway crossings, took place in 1892 when the Illinois Central elevated its tracks from Fifty-first to Sixty-seventh

elevation greatly increases the safety of both street and railway traffic as compared with surface trackage, the walling-in of neighborhoods is generally undesirable. A certain advantage, however, in favor of track elevation lies in the fact that many industrial plants, which receive greater tonnages of raw-materials and semi-finished goods than that of products shipped, can be more efficiently served by elevated tracks with downward grades on the sidings leading into the plants.

The localization of industrial plants along the railway routes emphasizes the cellular pattern of the city and the isolation of communities within the city one from another.

The barrier effect of railway lines, furthermore, results in many small areas of a city block to a large portion of a square mile being cut off from easy access to neighborhood facilities such as schools and shopping centers. In many instances it is impracticable, because of the high cost, to provide an underpass at every place where a street intersects a railway.

The relationship between railways and the settlement of suburban areas is clearly evident in the pronged or stellate pattern of the urban border, with its many appendages along railway lines. Although the automobile has partially released the interstitial areas from the previous limitations of lack of transportation, sites within easy access to suburban railway stations are still highly desirable, and the war has greatly increased their desirability. There has been, in the years before the present war, no significant decline in the suburban passenger traffic carried by the railways; the increased use of the automobile for commutation has at least been partially offset by the greatly increased population of many of the suburbs. In any plans for the re-

Street as part of a large program of improvements designed to handle the passenger traffic in connection with the Columbian Exposition. Two years later the joint line of the Rock Island and the Lake Shore and Michigan Southern (New York Central) north of Englewood was elevated. By 1909 ordinances had been passed providing for the elevation of 149 miles, or nearly 75 per cent of the rights-of-way within the city. Practically all main line and important branch line tracks in the city are now elevated with the exception of a few routes through sparsely populated peripheral areas. Track elevation in the suburbs, however, is not general.

For an account of the progress that had been made during the first twenty years of track elevation in Chicago, see Track Elevation Within the Corporate Limits of the City of Chicago (Chicago: Track Elevation Department of the City of Chicago, 1909).

arrangement of the metropolitan area's railway facilities the suburban passenger routes and the handling of the commuter traffic at the Chicago terminals must be given consideration.

Railways and the patterns of streets and highways.--The relationships between the pattern of railways on the one hand and those of streets and highways on the other may be considered as complimentary and reciprocal. Railways could not function without streets and highways over which operate the trucks that assemble and distribute less-than-carload package and other freight to and from the railway freight terminals, the taxicabs that transfer passengers between the downtown depots, and the automobiles, busses and street cars that make accessible to many peripheral areas the advantages of passenger service on the railways that their routes cross.

In central Chicago the street system antedates the railways; consequently, the railway lines are aligned either east-west or north-south in conformance with the street gridiron. In peripheral parts of the city and in most suburbs, however, the street pattern is modified in the vicinities of railway lines, which are aligned diagonally directly between vital junctions and cities.

Formerly, the principal concern of planners in central Chicago with regard to the relationship between streets and railways was in the barriers to the extension of through streets that were formed by the railway areas. To eliminate one such barrier, the Chicago River was straightened and costly replacements of railway yards made; to eliminate another, the Union Station was constructed as two separate buildings.

More recently, there has been an increasing realization that access to and from the central business district is not entirely necessary on every street, but that traffic other than that engaged in local receipt and delivery can be routed on a limited number of wide streets, or preferably on specially designed "super-highways" or limited access routes, grade-separated from the other streets. Accordingly, the relationships between the pattern of the railways and that of the proposed superhighways becomes very important.

A series of "distributor" highways in central Chicago is under study by the Chicago Plan Commission and other agencies, the function of which would be to collect and distribute the traffic of the business district and the industrial belt on its fringes.

The distributor arteries are to form two quadrangles just outside of the business area and are to be linked with the radial super-highway routes that are planned to serve many sections of metropolitan Chicago.

The location of the railway terminals in downtown Chicago, both passenger and freight, should be considered in relation to the distributor highways, which could serve as transfer routes between passenger terminals and between industries and freight stations, thereby relieving congestion on downtown streets. A local bus line on the distributor roads may well be co-ordinated with the suburban railway service, in which case suburban passenger terminals may be located at some distance from the central business district but within quick access by the distributor highways.

The locations of projected limited access and express highways in several other parts of metropolitan Chicago, also under study, is closely related to the locations of the railways. The industrial areas that have developed along many of the railway lines, such as those along the middle and inner belt routes, are the axes along which several of the highways are projected. The problem of locating such new arteries at appropriate distances from the railways in order to permit expansion of industries on the one hand, and to prevent an excessive amount of land to be unused by industry or residences because of attenuated shape and proximity to incompatible uses on the other, can be solved only by consideration of the services offered by the railways in relation to the requirements of industrial location.

The relationships between the railways and the local mass transportation facilities including surface cars, elevated and subway rapid transit lines, and busses must also be considered in the development of a comprehensive plan for the city.

Railways and the city plan.--The National Resources Planning Board, in studying the possible future Federal policy in relation to urban railway terminals, stated:

Great improvements in service to the public, better utilization of land and air rights in large urban centers, and the removal of many existing blighted areas would result from the substantial reconstruction of terminal facilities. The objective would be, of course, to fit into the most desirable pattern of urban development a series of co-ordinated terminals serving all types of transport and open on equal terms to all carriers serving the area.

Terminals planned to meet the requirements of developed

centers would replace the multiplicity of scattered facilities which have grown in and around most of our large cities in a more or less haphazard fashion. These terminals would handle rail, motor, water and air transport within the framework of a single plan in order to eliminate much of the wasteful transfer and hauling which occurs under existing arrangements and to avoid the marked loss of time which results from the use of scattered facilities under diverse ownership. They would be connected with all parts of the urban area to be served by belt rail lines and trucking facilities.

The obstacles to large scale developments of this sort proceed from the independent and competitive attitude of the carriers and their solicitude for existing competitive advantages, the opposition of labor groups, the fears of shipper groups and of communities likely to be affected, and the lack of any definite and obviously superior plan for consolidation. Moreover, any readjustment of the present rail plant for consolidated operation would require heavy investment in new facilities to provide for changed flow of traffic.¹

The railway pattern of metropolitan Chicago offers an almost perfect example of such situation, wherein inertia and competition play significant roles in the perpetuation of facilities at locations where they once could function efficiently, but which no longer are the best locations for the smooth, economical and efficient performance of the functions for which the facilities designed.

On the whole, the pattern of railway facilities in metropolitan Chicago, which developed in response to the forces of competition without any large scale, comprehensive planning and integration, is reasonably efficient. The passenger traffic on most of the radial trunk lines is handled expeditiously to and from central Chicago. The suburban traffic on some lines is excellent, and serves to emphasize the functions that railways have had in the past in the peripheral expansion of the city. The freight is handled reasonably rapidly and efficiently through the classification yards on the edge of the city, and is distributed throughout the metropolitan area by a complex, but reasonably good network of circumferential belt lines, trunk lines, and industrial switching lines.

There is need, however, for the improvement of the pattern and its operation in several respects. The classification of freight can be even further simplified and expedited. The traffic can be re-routed, in some cases, to avoid even more than at present

¹National Resources Planning Board, Transportation and National Policy (Washington: Government Printing Office, 1942), pp. 64-65.

the more congested area in the vicinity of the commercial core of Chicago, in order better to serve the newer industries that have located on the periphery. And finally, last but not least, the railway phalanx around Chicago's Loop, particularly the multiplicity of passenger terminals, must be simplified and reoriented if Chicago is to have a more orderly pattern.

Chicago does not need a new railway terminal plan. More than forty years of study and investigation have produced a multitude of plans, most of which are in essential agreement with regard to the main outlines in accordance with which the pattern should be modified, differing only in details. The newer of the plans are reasonably well oriented to the needs of the modern city, and minor modifications, if necessary, can easily be made before actual construction is started.

More than new railway plans, Chicago needs the dynamic and inspired leadership that alone can effectively bring together all of the conflicting interests that have in the past impeded the carrying out of plans for a more orderly pattern. The Chicago Plan Commission within the city, and the Chicago Regional Planning Association in the suburban fringe, have the opportunity to evaluate the plans of the past and adapt and modify one or more of them to meet the new conditions, and, finally, to demonstrate to the public and to the railway companies themselves the very tangible economic benefits that will result from a more orderly and modern pattern of terminal facilities, integrated into a general comprehensive metropolitan plan in which all forms of land use and activities will be in balance. The railways, which nurtured Chicago in its infancy, will then be able to serve it equally well in its maturity.

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Maps

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